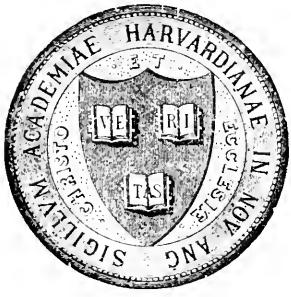
HARVARD UNIVERSITY.



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March 6, 1905 — March 17, 1906.

EDWIN HARRISON.

TRANSACTIONS

OF

THE ACADEMY OF SCIENCE OF ST. LOUIS.

VOL. XV.

JANUARY 1905 TO DECEMBER 1905.

PUBLISHED UNDER DIRECTION OF THE COUNCIL.

ST. LOUIS:
NIXON-JONES PRINTING CO.

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1. L. WITTMACK. — Our Present Knowledge of Ancient Plants. — Issued February 25, 1905 1
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CORRECTIONS.

P. 6, line 5. — Add " before Well.
7 from bottom. — Add " after years.
P. 12, line 6 from bottom. — Add . after butter.
P. 19, line 8 from bottom. — For mesoternum, read mesosternum.
P. 39, line 3 from bottom. — For ciose, read close.
2 from bottom. — For approximaie, read approximate.
P. 45, line 17. — For paciflcum, read pacificum.
14 from bottom. — For ' , read , .
P. 49, line 21. — For veutral, read ventral.
P. 53, line 34. — For simiiar, read similar.
P. 62, line 19. — For then, read than.
P. 63, line 14. — For moderably, read moderately.
P. 69, line 6. — For nineteen, read twenty-six.
9 from bottom. — For deflexed flanks, read deflexed flanks.
P. 74, line 14. — For frequentiy, read frequently.
14 from bottom. — For feely, read feebly.
P. 75, line 18, 19. — For genetally, read generally.
P. 79, line 13 from bottom. — For narrowely, read narrowly and read , after straight.
P. 99, line 21. — For there-fourths, read three-fourths.
P. 100, line 12. — For Massachusets, read Massachusetts.
P. 108, line 25. — Omit second " as. "
P. 146, line 8. — For Acaloph ena, read Alcalophaena.
last line. — For horridual, read horridula.
P. 148, line 19. — For bnt, read but.
P. 160, line 13 from bottom. — For rugulation, read regulation.
P. 171, line 25. — For smail, read small.
P. 188, line 5. — For norrower, read narrower.
P. 195, line 8 from bottom. — For distaece, read distance.
P. 219, line 12. — For triemarginate, read trimarginate.
4 from bottom. — For anteriar, read anterior.
P. 246, line 3. — Omit third " as " and for gradully, read gradually.
10. — For miuntely, read minutely.

Vol. XIV.

P. XLII, line 10. — Strike out the two paragraphs following the word researches.

MEMBERS.

1. PATRONS.

Eliot, Henry W.....1212 Mo. Trust bldg.
†Harrison, Edwin.....
McMillan, Mrs. Eliza.....25 Portland pl.
McMillan, William Northrop.....507 Lincoln Trust bldg.

2. HONORARY MEMBERS.

Arrhenius, Prof. Svante.....University of Stockholm, Sweden.
Bahlsen, Prof. Dr. Leopold.....Berlin, Germany.
Boltzmann, Prof. Ludwig.....University of Vienna, Austria.
Chavero, Señor Alfredo.....National Museum, Mexico.
Escherich, Prof. Theodore .....University of Vienna, Austria.
Kitasato, Prof. Shibasaburo.....University of Tokio, Japan.
Lewald, Geh. Oberreg. Rath Theodor.....Berlin, Germany.
Limburg, Stirum, Graf.....Berlin, Germany.
Moissan, Prof. Henri.....Sorbonne, Paris, France.
Orth, Geh. Rath Dr. Johann .....University of Berlin, Germany.
Oswald, Prof. Wilhelm.....University of Leipzig, Germany.
Ramsay, Sir William .....Royal Institute, London, England.
Rutherford, Prof. Ernest.....McGill University, Montreal, Canada.
Van 't Hoff, Prof. J. W..... University of Berlin, Germany.
Waldeyer, Geh. Rath Prof. Dr. Wilhelm .....University of Berlin, Germany.
Wassermann, Prof. Dr. A.....University of Berlin, Germany.
Wittmack, Geh. Reg. Rath Prof. Dr. L.....University of Berlin, Germany.

3. ACTIVE MEMBERS.

Adkins, James..... .....Park and Vandeventer avs.
Alleman, Gellert*.....Swarthmore College, Swarthmore, Pa.

---

* Non-resident.
† Died May 13, 1905.

Allen, Terry W.....5061 Lindell av.
Alt, Adolf.....3036 Locust st.
Altheimer, Benjamin.....4349 Westminster pl.
Andrews, L. W.....Mallinckrodt Chemical Works.
Andrews, William Edward*.....Taylorville, Ill.

Bagby, Julian*.....New Haven, Mo.
Bain, Robert Edward Mather.....900 Locust st.
Barck, Carl.....Humboldt bldg.
Bartlett, George M.....215 Pine st.
Baumgarten, Gustav.....4900 Berlin av.
Becktold, William B.....212 Pine st.
Bernays, A. C.....3623 Laclede av.
Bernays, Walter.....Office of City Chemist.
Bixby, William Keeney.....13 Portland pl.
Boeckeler, William L.....4441 Laclede av.
Boyle, Wilbur F.....Laclede bldg.
Brannon, Melvin A.*.....University, N. Dak.
Brennan, Martin S.....1414 O'Fallon st.
Brimmer, George G.....6900 Michigan av.
Brookings, Robert S.....5125 Lindell av.
Brown, Arthur A.....4023 West Pine boul.
Brown, Daniel S.....2212 DeKalb st.
Brown, Willi.....3526 Pine st.
Burg, William.....1756 Missouri av.
Burnett, E. C.....University Club.
Busch, Adolphus.....1 Busch pl.
Busch, Aug. A.....Busch pl.
Bush, Benjamin Franklin*.....Courtney, Mo.

Calvert, Sidney*.....State University, Columbia, Mo.
Carpenter, George O.....Russell and Compton avs.
Carter, Howard*.....Webster Groves, Mo.
Carver, George Washingto *.....Tuskegee, Ala.
Chaplin, Winfield S.....Washington University.
Chappell, W. G.....3810 Westminster pl.
Chase, E. C.....Oriel bldg.
Chouteau, Pierre.....912 Security bldg.
Comstock, T. Griswold.....3401 Washington av.
Conklin, Harry R.*.....Joplin, Mo.
Cramer, Gustav.....c/o G. Cramer Dry Plate Co.
Crandall, George C.....4287 Olive st.

Crunden, Frederick Morgan.....Public Library.
Curtis, William S.....St. Louis Law School.
Cushman, Allerton S.*.....Bryn Mawr, Pa.

Dame, James E.....2353 Albion pl.
Dameron, Edward Caswell*.....Clarksville, Mo.
Davis, N. H.....56 Vandeventer pl.
Davis, John D.....421 Olive st.
De Menil, Alexander N.....De Menil bldg., 7th and Pine sts.
Diehm, Ferdinand.....1834 Kennett pl.
Dodd, Samuel M. .....415 Locust st.
Douglas, Archer W.....c/o Simmons Hardware Co.
Drake, George S. .....64 Vandeventer pl.
Drosten, F. W. .....2011 Park av.
Duggar, B. M.*.....809 Virginia av., Columbia, Mo.

Eimbeck, August F.*.....New Haven, Mo.
Eliot, Edward C.....5468 Maple av.
Engler, Edmund Arthur*.....11 Boynton st., Worcester, Mass.
Erker, Adolph P.....608 Olive st.
Espenschied, Charles. ..... 3500 Washington av.
Euston, Alexander.....3730 Lindell boul.
Evers, Edward ....1861 N. Market st.
Ewing, Arthur E.....5944 West Cabanne pl.
Eycleshymer, A. E. .....5649 Cabanne pl.

Favor, Ernest Howard*.. ....Box 842, Columbia, Mo.
Fernald, Robert Heywood.....Washington University.
Fischel, Washington E..... .....3841 Washington av.
Forbes, Stephen A.*.....Urbana, Ill.
Fordyce, John R.*..... ...2223 Louisiana st.,
Little Rock, Ark.
Francis, David R ....4421 Maryland av.
French, George Hazen*. .....Carbondale, Ill.
Frerichs, Frederick W.....3828 Westminster pl.
Frick, John Henry*.....Warrenton, Mo.
Fruth, Otto J..... .....3066 Hawthorne boul.
Fry, Frank R.....4919 Washington boul.
Funkhouser, Robert Monroe .....4334 Olive st.

Gazzam, James Breading.....514 Security bldg.
Gecks, Frank..... .....3453 Magnolia av.
Gerling, H. J.....4320 Cook av.

Glasgow, Frank A.....3894 Washington boul.
Glasgow, William C.....2847 Washington av.
Goldstein, Max A.....3858 Westminster pl.
Goodman, Charles H.....3329 Washington av.
Graf, A. V.....1325 S. 7th st.
Graves, William W.....3900 Olive st.
Graves, Willis Nelson. .....2813 Lafayette av.
Green, John.....2670 Washington av.
Gregory, Elisha Hall.....3525 Lucas av.
Gregory, Elisha H., Jr.*.....Medical Dept. Univ. of Pa., Philadelphia.
Grindon, Joseph.....3894 Washington av.
Gundelach, Chas. H .....4523 Washington boul.
Gundelach, W. J.....3703 Finney av.
Gurney, James ....Tower Grove and Magnolia avs.

Haarstick, Henry C..... .....103 Chamber of Commerce.
Hambach, Gustav†..... .....1319 Lami st.
Hardaway, W. A.....4500 Olive st.
Harris, James Arthur.....Mo. Botanical Garden.
Hartmann, Rudolph.....2020 Victor st.
Held, George A .....International Bank.
Herzog, William .....3651 Castleman av.
Hirschberg, Francis D.....3818 Lindell boul.
Hitchcock, Albert Spear*.. .....U. S. Dept. Agriculture, Washington, D. C.
Hitchcock, George C.....709 Wainwright bldg.
Homan, George.....323 Odd Fellows' bldg.
Hough, Warwick.....Circuit Court, Room 1.
Hughes, Charles Hamilton.....3860 West Pine boul.
Hume, H. Harold*..... .....Dept. of Agriculture, Raleigh, N. C.
Hunicke, Henry August.....3532 Victor st.
Hurter, Julius..... .....2346 S. 10th st.
Hus, Henri Th. A.....Mo. Botanical Garden.
Huston, Hy. A.....134 Laclede bldg.
Irish, Henry C.....Mo. Botanical Garden.
Ives, Halsey Cooley.....Museum of Fine Arts.

Jones, Breckinridge.....4010 Lindell boul.

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† Elected a life-member, January 3, 1882.

Keiser, Edward H.....Washington University.
Kinealy, John H.....619 Granite bldg.
King, Goodman.....78 Vandeventer pl.
Kirchner, Walter C. G.....1211 N. Grand av.
Klem, Mary J.....3133 Nebraska av.
Koch, Waldemar H A.*.....State University, Columbia, Mo.

Lackland, Rufus J.....1623 Locust st.
Langsdorf, Alexander S.....Washington University.
Lange, Th.....2709 Gamble st.
Leavitt, Shermann.....Washington University.
Lefevre, George*.....State University, Columbia, Mo.
Leighton, George Bridge.....803 Garrison av.
Letterman, George W.*.....Allenton, Mo.
Lichter, John J.....1740 Simpson av.
Lloyd, Hiram.....Odd Fellows' bldg.
Loeb, Hanau Wolf.....3559 Olive st.
Luedeking, Robert.....1837 Lafayette av.
Lumelius, J. George.....1225 St. Ange av.
Lyon, Hartwell Nelles.....3910 Russell av.

Mack, Charles Jacob.....113 N. Broadway.
Mallinckrodt, Edward.....26 Vandeventer pl.
Mallinckrodt, Edward, Jr.....26 Vandeventer pl.
Mardorf, W. C.....1111 Chouteau av.
Markham, George Dickson.....4961 Berlin av.
Marx, Christian William*.....University of Cincinnati,
Cincinnati, O.
Mason, Silas C.*.....Berea, Ky.
Matthews, Leonard.....300 N. 4th st.
McBride, W. J.....5093 Washington av.
Meier, Theodore G.....5220 Washington boul.
Merrell, Albert.....3814 Washington boul.
Miller, Charles F.....1751 Missouri av.
Monell, Joseph T.....3227 Iowa av.
Monroe, Lee Ernest*.....Eureka, Mo.
Moore, Robert.....61 Vandeventer pl.
Mudd, Harvey G.....2604 Locust st.
Mueller, Ambrose*.....Webster Groves, Mo.

Nagel, Charles.....3869 Washington boul.
Nasse, Aug.....209 N. 2d st.

Nautze, Gustav.....2868 S. 18th st.
Nelson, Aven*.....Laramie, Wyom.
Nipher, Francis E.....Washington University.
Norton, J. B. S.*.....College Park, Md.

Oglevee, Christopher Stoner*.....Lincoln, Ill.
Olshausen, Ernest P.....1115 Rutger st.
Olshausen, George R.*.....Cornell University, Ithaca, N. Y.
O'Reilly, Andrew J.....1507 Papin st.
O'Reilly, Robert J.....3411 Pine st.
Outten, W. B.....Missouri Pacific Hospital.
Overstolz, Herman.....106 N. Broadway.

Palmer, Ernest Jesse*.....321 S. Allen st., Webb City, Mo.
Pammel, Louis Hermann*.....Ames, Ia.
Pantaleoni, Guido.....415 Locust st.
Parker, George Ward*.....45 Broadway, New York City.
Pauls, Gustavus.....St. Louis Altenheim.
Pettus, W. H. H.....4373 Westminster pl.
Pfeiffer, Egmont.....2007½ Penn st.
Pike, Sherman B.*.....Seattle, Wash.
Pitzman, Julius.....1900 S. Compton av.
Poats, Thomas Grayson*.....Clemson College, S. C.
Post, Martin Hayward.....5371 Waterman av.
Prynne, Charles Martyn.....Lincoln Trust bldg.

Quaintance, A. L.*.....U. S Department of Agriculture, Washington, D. C.
Randall, John E *.....Cleveland Lamp Factory, Cleveland, O.
Raphael, Abraham.....5164 Raymond av.
Ravold, Amand.....2806 Morgan st.
Reed, Howard S.*.....1002 Lowery st., Columbia, Mo.
Reverchon, Julien*.....R. F. D. 8, Dallas, Texas.
Rice, Chas. M.....3733 Pine st.
Richter, Phil. George.....2424 S. 18th st.
Rieloff, F. C.....German Consulate, Laclede bldg.
Rilliet, Chas. E.....3018 N. Newstead av.
Robert, Edward Scott.....1105 Missouri Trust bldg.
Roever, William Henry*.....Cambridge, Mass.
Rolfs, Peter H.*.....Tropical Laboratory, Miami, Fla.
Rosenwald, Lucian*.....412 Delaware st., Kansas City, Mo.

Ruf, Frank A.....5863 Cabanne av.
Ryan, Frank K.....2725 Lawton av.

Sander, Enno.....2807 Lawton av.
Sargent, Charles Sprague*.....Jamaica Plain, Mass.
Schmidt, Louis.....Franklin Bank.
Schmitz, R.....6th and St. Charles sts.
Schneck, Jacob*.....Mt. Carmel, Ill.
von Schrenk, Hermann.....Mo. Botanical Garden.
Schroers, John.....1730 Missouri av.
Schrowang, Otto.....Gay bldg.
Schwab, Sidney I.....2602 Locust st.
Schwarz, Frank.....1520 Lafayette av.
Schwarz, Henry.....440 N. Newstead av.
Schweitzer, Paul* .....Columbia, Mo.
Scott, Henry C.....64 Vandeventer pl.
See, Thomas Jefferson Jackson*..Naval Observatory,
Mare Island, Cal.
Selby, Augustine Dawson*.....Wooster, O.
Senseney, E. M.....2829 Washington av.
Sheldon, Walter L.....4065 Delmar av.
Shepley, John F .....60 Vandeventer pl.
Shoemaker, William Alfred.....4386 Westminster pl.
Simmons, E. C..... .....9th and Spruce sts.
Simmons, Wallace D.....9th and Spruce sts.
Sluder, Greenfield.....2647 Washington av.
Smith, Arthur George*.....422 N. Dubuque st., Iowa City, Ia.
Smith, D. S. H.....3646 Washington boul.
Smith, Irwin Z.....87 Vandeventer pl.
Smith, Jared G.*.....Honolulu, Hawaiian Islands.
Soldan, F. Louis.....3634 Flad av.
Spiegelhalter, Joseph.....2166 Lafayette av.
Starkloff, H. M.....3623 Cleveland av.
Starr, John E.*.....258 Broadway, New York City.
Staudinger, B.....3556 Lindell boul.
Stedman, John Moore*.....State University, Columbia, Mo.
Stevens, Charles D.....1749 S. Grand av.
Stevens, Wyandotte James.....4043 Juniata st.
Stocker, George J.....2833 S. King's Highway.
Summa, Hugo.....2249 St. Louis av.

Taussig, Albert E..... 2647 Washington av.

Taussig, William.....3447 Lafayette av.
Teichmann, William C.....Mallinckrodt Chemical Works.
Terry, Robert James.....1806 Locust st.
Thacher, Arthur.....4304 Washington boul.
Thomas, John R.....4128 Washington av.
Thurman, John S.....4436 Olive st.
Timmerman, Arthur H.....2017 Locust st.
Tittmann, Harold H.....28 Westmoreland pl.
Trelease, William..... .....Mo. Botanical Garden.
Tyler, Eliza Edward*.....State University, Columbia, Mo.
Tyrrell, Warren Ayers.....620 Chestnut st.

Vallé, Jules F.....3303 Washington av.
Van Ornum, John Lane.....Washington University.
Vickroy, Wilhelm Rees.....2901 Rauschenbach av.

Walter, Jacob.....1931 S. Compton av.
Watts, Millard F.....4362 Morgan st.
Weller, Stuart*.....University of Chicago,
Chicago, Ill.
Westgate, John Minton*.....Dept. of Agriculture,
Washington, D. C.
Wheeler, H. A..... .....3439 Lucas av.
Whelpley, Henry Milton.....2342 Albion pl.
Whitaker, Edwards.....300 N. 4th st.
Whitten, John Charles*.....Columbia, Mo.
Widmann, Otto.....5105 Morgan st.
Wilson, Edward Allen.....3745 W. Pine st.
Winkelmeyer, Christopher.....3540 Lawton av.
Wislizenus, Frederick A.....808 Wainwright bldg.
Witt, Thomas D.....10 S. Newstead av.
Wolff, Herbert W.....3514 Shenandoah st.
Woodward, Calvin Milton.....Washington University.
Wright, Geo. M.....4457 Westminster pl.

Zahorsky, John..... ... .1460 S. Grand av.
Zawodny, Joseph*.....Schloss Lobes, Mscheno bei
Melnik, Bohemia, Austria.
Zollmann, Geo. H.....833 N. 3d st.

CONSTITUTION.

ARTICLE I. NAME.

SECTION 1. This Association shall be called "THE ACADEMY OF SCIENCE OF ST. LOUIS."

ARTICLE II. OBJECT.

SECTION 1. It shall have for its object the promotion of science.

SEC. 2. As means to this end the Academy shall hold meetings for the consideration and discussion of scientific subjects; shall take measures to procure original papers upon such subjects; and shall, as often as may be practicable, publish its transactions. It shall also establish and maintain a cabinet of objects illustrative of the several departments of science, and a library of works relating to the same. It shall also place itself in communication with other scientific institutions.

ARTICLE III. MEMBERS.

SECTION 1. The Academy shall consist of *Active Members*, *Corresponding Members*, *Honorary Members*, and *Patrons*.

SEC. 2. *Active Members* shall be persons interested in science, and they alone shall conduct the affairs of the Academy.

SEC. 3. Persons not living in the City or County of St. Louis who may be disposed to further the object of the Academy by original researches, contributions of specimens, or otherwise, may be elected *Corresponding Members*.

SEC. 4. Persons not living in the City or County of St. Louis may be elected *Honorary Members* by virtue of their attainments in science.

SEC. 5. Any person conveying to the Academy the sum of

one thousand dollars ($1,000), or its equivalent, may be elected a *Patron*.

SEC. 6. Persons may be admitted to any of the preceding classes of membership, or dismissed therefrom, in accordance with the regulations prescribed by the By-Laws.

ARTICLE IV. OFFICERS.

SECTION 1. The officers of the Academy shall be chosen from the active members, and they shall consist of a

President,
1st Vice-President,
2d Vice-President,
Recording Secretary,
Corresponding Secretary,
Treasurer,
Librarian,
Three Curators,
Two Directors.

Said officers shall be elected at the time and in the manner prescribed by the By-Laws, and shall hold their offices for one year, or until their successors are elected.

SEC. 2. The duties of these officers shall be such as are customary and as prescribed by the By-Laws.

ARTICLE V. COUNCIL.

SECTION 1. The officers shall constitute the Council of the Academy and at its meetings five shall constitute a quorum.

SEC. 2. The duties of the Council shall be to consider all plans conducive to the welfare of the Academy; to audit all bills and order payment of such as they may approve; to consider all applications for membership; and to administer the business of the Academy, subject to the Constitution and By-Laws and to such instructions as may be given by the Academy.

ARTICLE VI. MEETINGS.

SECTION 1. The meetings of the Academy shall be held at such times and places as the By-Laws may direct.

ARTICLE VII. AMENDMENTS.

SECTION 1. Amendments to this Constitution shall be submitted in writing at a regular meeting. They shall be open to discussion until at least the second meeting thereafter. They may then be adopted by a two-thirds vote of a letter-ballot, conducted in the manner prescribed by the Council.

ARTICLE VIII. SECTIONS.

SECTION 1. To encourage and promote special investigations in any branch of science, members of the Academy may form Sections which shall be constituted as herein provided.

SEC. 2. For the formation of a Section written application shall be made to the Academy, at a regular meeting, by not less than six active members.

On the approval of this application by the affirmative vote of two-thirds of the members present at the next regular meeting, the Section shall be established and the names of the petitioners shall be recorded on its minutes as its founders.

SEC. 3. Sections may increase the number of their members by election, but only members of the Academy shall be elected members of any of the Sections.

SEC. 4. The officers of each Section shall be a Chairman and a Secretary, who shall be elected by its members at the first meeting of the Section, and subsequently at the first meeting in January of each year.

SEC. 5. The collections and books of each Section are the common property of the Academy. Donations of books and specimens made to or for any Section shall be received as donations to the Academy for the use of the Section.

SEC. 6. A report of the proceedings of each Section shall be submitted to the Academy at least once every month. Papers read before any Section with a view to publication by the Academy shall take the same course as papers read before the Academy.

SEC. 7. On all points not herein provided for, each Section shall be governed by the Constitution, By-Laws, and instructions of the Academy.

BY-LAWS.

I. REGULAR MEETINGS.

The regular meetings of the Academy shall be held on the first and third Monday evenings of every month, unless otherwise ordered by the Council.

II. SPECIAL MEETINGS.

Special meetings may be called by the President at his discretion, and shall be called by him on the written request of three or more members.

III. NOTICE OF MEETINGS.

The Recording Secretary shall send a notice of each meeting to every active member at least two days before such meeting.

IV. QUORUM.

Seven members shall constitute a quorum, but four members shall constitute a legal meeting for reading of papers.

V. ORDER OF BUSINESS.

The order of proceeding, at the regular meetings of the Academy, shall be as follows: —

1. Minutes of last meeting.
2. Report of the Council.
3. Reports of Committees.
4. Report of the Corresponding Secretary.
5. Donations to the Museum and Library.
6. Written Communications.
7. Oral Cummunications.
8. Deferred Business.
9. New Business.
10. Elections.
11. Proposals for Membership.
12. Adjournment.

VI. CORRESPONDING SECRETARY.

It shall be the duty of the Corresponding Secretary to conduct the correspondence and report to the Academy.

VII. TREASURER.

The Treasurer shall collect all moneys due the Academy; be custodian of all its funds, and pay such bills against the Academy as the Council shall approve. The Treasurer shall deposit the moneys and invest the funds of the Academy in its name and by and with the advice of the Council. Besides his annual report to the Academy, the Treasurer shall make such further reports and statements concerning the financial affairs of the Academy as the Council may from time to time require. Before entering upon his duties, the Treasurer shall give bond in such sum as may be required by the Council.

VIII. LIBRARIAN.

The Librarian shall take charge of all books belonging to or deposited with the Academy, and shall be responsible for the same; he shall keep a catalogue thereof, in which the names of contributors shall be inscribed; he shall superintend the distribution of all the publications of the Academy.

IX. COUNCIL.

The Council shall act as a publication committee; shall prepare a program for each meeting, and may make rules and regulations for their own guidance, not inconsistent with the Constitution and By-Laws.

X. ELECTION OF OFFICERS.

A nominating committee of three active members who are not officers of the Academy shall be elected at the first regular meeting in December. This committee shall nominate

candidates for all the offices for the ensuing year, and report the nominations at the following meeting, when other nominations may be made by any active member. The Recording Secretary shall mail to every active member a list of the nominees for office, at least ten days preceding the annual meeting. The polls shall be closed at 6 p. m. on the day of the annual meeting, after which the nominating committee shall count the ballots and announce the results to the Academy. A plurality of the votes cast shall suffice to elect.

XI. VACANCIES.

All vacancies shall be filled by the Council in a regular or called meeting, notice whereof having been given at least two days previously.

XII. ELECTION OF MEMBERS.

A candidate for admission to the Academy shall be proposed by not less than two members at any regular meeting. The proposal must then be referred to the Council, and if upon examination they shall find the candidate to be eligible and worthy of membership, they shall order the question as to his admission to be submitted to the Academy by ballot. If there be five votes in the negative, the candidate shall be rejected, and shall not be again voted upon for twelve months after such rejection. But if the number of negative votes be less than five, the candidate shall be elected, but shall not be considered a member until he shall have paid the initiation fee and the annual dues for the current year. Any failure to pay the initiation fee and annual dues within thirty days after the candidate has been notified of his election, shall work a forfeiture of all rights under said election, if the Council shall so determine. No entry shall be made on the record of the rejection of any candidate.

XIII. RESIGNATION OF MEMBERS.

Any member whose dues have been fully paid, may with-

draw from the Academy by a written resignation. Non-payment of dues for one year or longer may be treated as equivalent to resignation; but before any member is dropped from the rolls for delinquency, he shall be entitled to not less than four weeks' notice.

XIV. EXPULSION OF MEMBERS.

Upon the written request of five members, that, for cause stated, any member be expelled, the Council shall consider the matter, and if they deem it best, shall advise the member that his resignation will be accepted. He shall, however, have the right to demand and shall be given a copy of the charges against him, and shall have a reasonable time to present a written defense. The Council may then pass finally upon the matter, and if resignation has not been tendered, or a satisfactory defense made, may by an affirmative vote of four of their number expel the member, in which case they shall notify him and the Academy of their action, and his name shall be at once dropped from the list of members.

XV. INITIATION FEE AND DUES.

Resident active members shall pay an initiation fee of five dollars, and annual dues of six dollars, payable at the beginning of each year. Non-resident active members shall pay an initiation fee of five dollars and annual dues of one-half the dues for resident active members, payable at the beginning of each year.

XVI. HONORARY MEMBERS AND PATRONS.

Honorary members and Patrons shall be recommended by the Council, and elected by the unanimous vote of the members present at any regular meeting.

XVII. PUBLICATIONS.

Patrons and all active members not in arrears shall be

entitled to one copy of all the publications of the Academy issued subsequent to their election. Authors of papers shall be entitled to twenty extra copies of their individual papers.

XVII. SALE OF REAL ESTATE.

The property conveyed to The Academy of Science of St. Louis on the eighteenth day of March, 1903, by Edgar R. Hoadley and Lavinia L. Hoadley, as a gift from Mrs. Eliza McMillan and William N. McMillan, shall not be mortgaged or voluntarily incumbered by the Academy of Science; and the said property shall not be sold, except with the consent of two-thirds of the members of the Academy of Science, obtained by letter ballot, in such manner as may be prescribed by the Council, and, when sold, the proceeds of the sale or so much thereof as may be necessary, shall be used to provide a suitable location and building for the use of The Academy of Science of St. Louis.

XIX. AUTHORITY.

On all points of order and procedure, not provided for in the Constitution and By-Laws. *Robert's Rules of Order* shall be the authority.

XX. AMENDMENTS.

These By-Laws may be amended by two-thirds vote of all the members present at any regular meeting, provided notice of the proposed amendment shall have been mailed to every member at least one week before the vote thereon is taken.

ABSTRACT OF HISTORY.

ORGANIZATION.

The Academy of Science of St. Louis was organized on the 10th of March, 1856, in the hall of the Board of Public Schools. Dr. George Engelmann was the first President.

CHARTER.

On the 17th of January following, a charter incorporating the Academy was signed and approved, and this was accepted by vote of the Academy on the 9th of February, 1857.

OBJECTS.

The act of incorporation declares the object of the Academy to be the advancement of science and the establishment in St. Louis of a museum and library for the illustration and study of its various branches, and provides that the members shall acquire no individual property in the real estate, cabinets, library, or other of its effects, their interest being usufructuary merely.

The constitution as adopted at the organization meeting and amended at various times subsequently, provides for holding meetings for the consideration and discussion of scientific subjects; taking measures to procure original papers upon such subjects; the publication of transactions; the establishment and maintenance of a cabinet of objects illustrative of the several departments of science, and a library of works relating to the same; and the establishment of relations with other scientific institutions. To encourage and promote special investigation in any branch of science, the formation of special sections under the charter is provided for.

MEMBERSHIP.

Members are classified as active members, corresponding members, honorary members and patrons. Active membership is limited to persons interested in science, though they need not of necessity be engaged in scientific work, and they alone conduct the affairs of the Academy, under its constitution. Persons not living in the city or county of St. Louis who are disposed to further the objects of the Academy, by original researches, contributions of specimens, or otherwise, are eligible as corresponding members. Persons not living in the city or county of St. Louis are eligible as honorary members by virtue of their attainments in science. Any person conveying to the Academy the sum of one thousand dollars or its equivalent becomes eligible as a patron.

Under the by-laws, resident active members pay an initiation fee of five dollars and annual dues of six dollars. Non-resident active members pay the same initiation fee, but annual dues of three dollars only. Patrons, and honorary and corresponding members, are exempt from the payment of dues. Each patron and active member not in arrears is entitled to one copy of each publication of the Academy issued after his election.

Since the organization of the Academy, 988 persons have been elected to active membership, of whom, at the present time, 264 are carried on the list. Four patrons, Mr. Edwin Harrison, Mrs. Eliza McMillan, Mr. William Northrop McMillan and Mr. Henry W. Eliot, have been elected. The list of corresponding members (Vol. X., p. xii) includes 205 names, among which are the names of 103 persons known to be deceased.

The presence of a number of eminent scientists from all parts of the world at the International Congress during the World's Fair of 1904, was considered a suitable occasion for electing the following gentlemen as honorary members of the Academy, in recognition of their valuable services to science: Prof. Svante Arrhenius (Stockholm), Prof. Dr. Leopold

Bahlsen (Berlin), Prof. Dr. Ludwig Boltzmann (Vienna), Señor Alfredo Chavero (Mexico), Prof. Theodor Escherich (Vienna), Prof. Shibasaburo Kitasoto (Tokio), Geh. Ober Reg. R. Theodor Lewald (Berlin), Count Limburg-Stirum (Berlin), Prof. Henri Moissan (Paris), Geh. Rath Dr. Johann Orth (Berlin), Prof. Wilhelm Ostwald (Leipzig), Sir William Ramsay (London), Prof. Ernest Rutherford (Montreal), Prof. J. W. Van 't Hoff (Berlin), Geh. Rath Prof. Dr. Wilhelm Waldeyer (Berlin), Prof. Dr. Wassermann (Berlin), Geh. Rath Prof. Dr. L. Wittmack (Berlin), from all of which courteous letters of acceptance have been received.

OFFICERS AND MANAGEMENT.

The officers, who are chosen from the active members, consist of a President, two Vice-Presidents, Recording and Corresponding Secretaries, Treasurer, Librarian, three Curators, and two Directors. The general business management of the Academy is vested in a Council composed of the Officers.

The office of President has been filled by the following well-known citizens of St. Louis, nearly all of whom have been eminent in some line of scientific work: George Engelmann, Benjamin F. Shumard, Adolphus Wislizenus, Hiram A. Prout, John B. Johnson, James B. Eads, William T. Harris, Charles V. Riley, Francis E. Nipher, Henry S. Pritchett, John Green, Melvin L. Gray, Edmund A. Engler, Robert Moore, Henry W. Eliot, Edwin Harrison, and Adolf Alt.

MEETINGS.

The regular meetings of the Academy are held at its building, 3817 Olive Street, at 8 o'clock, on the first and third Monday evenings of each month, a recess being taken between the meeting on the first Monday in June and the meeting on the third Monday in October. These meetings, to which interested persons are always welcome, are devoted in part to the reading of technical papers designed for publication in the Academy's Transactions, and in part to the presentation of

more popular abstracts of recent investigation or progress. From time to time public lectures, calculated to interest a larger audience, are provided for in some suitable hall.

The following dates for regular meetings for the year 1906 have been fixed by the Council: —

Jan.	Feb.	Mar.	April.	May.	June.	Oct.	Nov.	Dec.
	5	5	2	7	4		5	3
15	19	19	16	21		15	19	17

LIBRARY.

After its organization, the Academy met in Pope's Medical College, where a creditable beginning had been made toward the formation of a museum and library, until May, 1869, when the building and museum were destroyed by fire, the library being saved. The library now contains 15,654 books and 14,245 pamphlets, and is open during certain hours of the day for consultation by members and persons engaged in scientific work.

PUBLICATIONS AND EXCHANGES.

Fifteen thick octavo volumes of Transactions have been published since the organization of the Academy, and widely distributed. Two quarto publications have also been issued: one from the Archaeological section, being a contribution to the archaeology of Missouri, and the other a report of the observations made by the Washington University Eclipse Party of 1889. The Academy now stands in exchange relations with 580 institutions or organizations of aims similar to its own.

MUSEUM.

After the loss of its first museum, in 1869, the Academy lacked adequate room for the arrangement of a public museum, and, although small museum accessions were received and cared for, its main effort of necessity was concentrated on the holding of meetings, the formation of a library, the publication of worthy scientific matter, and the maintenance of relations with other scientific bodies.

But now in possession of a suitable home, full attention can again be devoted to the museum, and the same is gradually growing.

RECORD.

From January 1, 1905, to December 31, 1905.

Meeting of January 16, 1905.

The Academy of Science of St. Louis met in the Academy Building at 8:00 p. m., January 16, 1905; Dr. A. Alt in the chair; attendance fifty.

The Treasurer reported on the Academy's financial condition for the year 1904, showing a balance of $1,381.33.*

The Librarian submitted his annual report for the year 1904.†

The Nominating Committee reported the results of the Annual Election as follows:—

President	Dr. Adolf Alt.
First Vice-President	Wm. Trelease.
Second Vice-President	Dr. Joseph Spiegelhalter.
Recording Secretary	Ernest P. Olshausen.
Corresponding Secretary	August Hunicke.
Treasurer	Enno Sander.
Librarian	G. Hambach.
Curators	G. Hambach,
	Frank Schwarz,
	Julius Hurter.
Directors	F. E. Nipher,
	Otto Widmann.

Dr. H. M. Whelpley delivered an interesting lecture on the "Mammoth Cave of Kentucky," illustrated with numerous lantern slides, giving a description of the cave, a history of its discovery and the methods of thorough inspection.

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* Transactions, Vol. XIV., Page XLIV.

† Transactions, Vol. XIV., Page XLV.

February 6, 1905.

President Adolf Alt in the chair; attendance nineteen.

Mr. J. H. Kinealy delivered a lecture on "Calorimeters for Determining the Heating Powers of Fuels." With the aid of a series of lantern slides he gave a history and a description of the various methods and apparatus used for this purpose during the past one hundred years.

February 20, 1905.

Prof. F. E. Nipher in the chair; attendance thirteen.

Mr. G. Pauls read a short paper on the relations of human and plant life.

Prof. C. M. Woodward delivered a lecture on the "Action of an Eccentric Weight on a Rolling Wheel." He showed by a series of mathematical formulae that the eccentric weight of a locomotive wheel in motion, together with the centrifugal force, when running at a high velocity of about sixty miles exerts an enormous pressure upon the track, which pressure is balanced by a similar weight in the opposite spoke of the wheel acting as a lifting power.

March 6, 1905.

President Adolf Alt in the chair; attendance fifteen.

Mr. H. A. Huston, the lecturer of the evening, donated to the Academy a collection of the raw materials from which the products of the Stassfurt Industry are derived.

Mr. H. A. Huston delivered a lecture on the "Stassfurt Industry of Potash, Sulphate of Magnesia, Bromine, etc.," illustrating with a series of lantern slides the geological formation, the method of mining the raw material, the technical apparatus and the shipping of the products.

March 20, 1905.

President A. Alt in the chair; attendance fifteen.

Dr. L. W. Andrews was elected an active member.

Dr. H. M. Whelpley delivered a lecture on the "Progress in the Study and Development of Medical Remedies."

April 3, 1905.

President A. Alt in the chair; attendance twelve.

Mr. Julius Hurter donated to the Academy a collection of mollusks, containing 216 species represented by 776 specimens, with a catalogue of the same. The thanks of the Academy were expressed for the donation.

Mr. Henri Th. A. Hus was elected an active member.

Mr. G. E. Clement gave an outline of the system of government forestry with reference to the difficulties of some of the problems, the economical utilization of timber, the treatment of timber with zinc chloride and creosote for the preservation of wood as used for railway ties and bridge timber, and of timber testing for determining the value of various timbers.

April 17, 1905.

President A. Alt in the chair; attendance forty.

Mr. John F. Wixford delivered a lecture on the "Purification of our City Water Supply." After a brief sketch of his connection with the city water works as chemist, during which time the various processes for clarifying river water were tried — only to be found wanting — the speaker explained in detail his process of converting the constituents of the water into coagulants, which in a great measure do the work of purification. He found that the main ingredients of the water, clay, carbonic acid, calcium bicarbonate, salicylic acid and magnesia compounds, could be converted into insoluble compounds by lime water. The process consists in adding to the water a solution of ferrous sulphate and then enough hydrate of lime to convert not only the metallic salt first added into an insoluble hydrate but also the very constituents of the water itself into insoluble compounds. The insoluble compounds formed by the reaction of the lime on the compounds

in the water crystallize upon the metallic hydrate formed by the action of the lime on the metallic salt first added. Aggregations of suspended matter soon appear and settle rapidly, leaving the water clear and pure without any process of filtration.

May 1, 1905.

President A. Alt in the chair; attendance sixteen.

Mr. Louis Schmidt was elected an active member.

Dr. N. M. Glatfelter presented by title a catalogue of 469 of the Higher Fungi in the vicinity of St. Louis. He exhibited a number of interesting specimens, most of which were new species and edible.

Mr. G. Pauls presented some specimens of tulips which had developed and colored their petals four inches under the surface.

Mr. Henri Th. A. Hus of the Missouri Botanical Garden delivered a lecture on the "Influence of Man on the Form of Plants," illustrated with green and herbarium specimens.

The speaker introduced his subject by giving a short sketch of the conditions necessitating, in course of time, the changes in plants, made by man, because of his change from a barbarian to a civilized being.

Under the influence of man the form of fruits and flowers, and even entire plants, undergo changes, which may be in the individual or in the species. Changes in the individual are mechanical, based chiefly upon physiological consideration.

Among the principal means of influencing individuals, are

1. Pruning, with the object of producing better fruit, or for decorative purposes, as the hedges of the old Italian country places and the Japanese gardens.

2. Grafting, which produces improved forms as a result of selection.

3. Forcing, for the mercantile value, as of strawberries and lillies of the valley. This has its limitations, however, as a certain period of rest is necessary for every plant. But this period of rest can be brought about earlier by not watering,

by artificial cooling or by a narcosis. Consequently the growing season can be secured much earlier than usual.

Far more interesting is the influence of man upon species, depending upon fluctuating variability and mutation. While selection cannot produce a constant species, it helps us to keep up the standard.

The most wonderful achievements have been obtained by hybridization. As a result of crossing, flowers and fruits with which we are familiar, are very different from the wild varieties; so changed, in fact, that we do not recognize them unless trained botanists.

Among the living botanists, who have been successful in producing hybrids, is Burbank of California. His aim is to produce plants with shipping qualities and such as can be grown in regions which are now little used for cultivation. One of the things he has worked out is the "Thornless Cactus," which can be grown on the deserts of Arizona and New Mexico and forms excellent cattle food for dairies. This hybrid Burbank obtained by crossing a certain species of Mexican cactus with a certain species from South Africa.

Hybridization is not successful, however, if the two plants taken are too widely separated in their characteristics. Either no seed is formed, or hybrids are produced, which are not fertile; strawberries, when crossed with blackberries, produce a variety with flowers but no fruit. The best results are obtained by combination.

May 15, 1905.

President A. Alt in the chair; attendance fourteen.

The President announced the death, on May 13th, of Mr. Edwin Harrison, a patron and former president of the Academy. Prof. F. E. Nipher, Dr. G. Hambach and Mr. E. P. Olshausen were appointed a committee to prepare resolutions commemorative of the deceased. On motion of Dr. Hambach the Secretary was instructed to request Prof. G. C. Broadhead of Columbia, Mo., to write a biography of Mr. Harrison for publication in the Proceedings of the Academy.

The President also announced the death, on April 9th, of Mr. Wm. H. Pulsifer, an esteemed member of the Academy. The drafting of resolutions, referring to his demise, was intrusted to the same committee.

Dr. J. Arthur Harris delivered a lecture on the "Influence of Insects upon the Geographical Distribution of Plants."

JUNE 5, 1905.

President A. Alt in the chair; attendance seventy.

Prof. J. F. Abbott delivered an interesting lecture on "Social Customs of the Japanese" illustrated with lantern slides.

The committee appointed to prepare resolutions commemorative of Mr. Wm. H. Pulsifer, who died at Washington, D. C., April 9, 1905, recommended the following: —

The Academy of Science, on hearing of the death of William H. Pulsifer, desires to express its deep sorrow at the loss of one of its oldest and most esteemed members.

During his residence in St. Louis and even after his removal to the East, he was ever active in furthering the welfare of the Academy and in extending the field of its activity. He always showed untiring interest in its proceedings and lent all possible aid. He was a member of the Archaeological Section in 1876, which, for some time, furnished material for the Academy's publications.

The establishment of a natural history museum was also in part due to his efforts, he being one of the original members of the "St. Louis Museum of Arts and Sciences," formed in 1877 under the auspices of the Merchants' Exchange.

He represented a rare example of the true citizen, whose interest in higher endeavors is not shadowed by his business instincts. He was therefore highly esteemed by all who knew him well.

(Signed) F. E. Nipher,
G. Hambach,
E. P. Olshausen.

The resolutions were adopted as presented and ordered spread on the record of the Academy.

WILLIAM HENRY PULSIFER.

William Henry Pulsifer was born at Boston in 1831, the eighth in descent from Benedict Pulsifer, who settled at Ipswich, Massachusetts, in 1662, and who is the first of the name of Pulsifer known to have lived in America.

Mr. Pulsifer attended the Grammar and High Schools of the City of Boston. Upon leaving school he engaged in mercantile business in Boston and resided there with occasional extended business visits to the West until 1859, when he removed to St. Louis, Missouri, where he became engaged in the manufacture of white lead and other chemical products. He continued to reside in St. Louis until 1890, when he retired from active business and returned to the East, residing, in the winter, at Newton Centre, Mass., and at Washington, D. C., and passing the summer at his country place at Nonquitt, on Buzzard's Bay, Mass.

During his residence in St. Louis, Mr. Pulsifer was prominent in many business and financial enterprises. He was for many years president of the St. Louis Lead and Oil Co.; treasurer of the American Central Insurance Company; a director of the National Bank of Commerce and of several corporations. He was a fellow of the American Association for the Advancement of Science; a member of the Academy of Science of St. Louis; of the Anthropological Society of Washington; of the American Folk-Lore Society; of the National Geographic Society; of the American Forestry Association; of the New England Historic-Genealogical Society; of the Society of the Sons of the American Revolution; and of the Bostonian Society.

Mr. Pulsifer was a member of the Union Club of New York and of the Cosmos and Metropolitan Clubs of Washington, D. C.

Mr. Pulsifer died April 9, 1905, at Washington, D. C.,

where he had been spending the winter. He leaves a wife and one daughter, Mrs. H. Duncan Wood of New York.

The committee appointed to prepare resolutions on the death of the Academy's late president, Mr. Edwin Harrison, recommended the following:—

With the death on May 13, 1905, of Mr. Edwin Harrison, for many years a patron of the Academy and its President in 1904, the Academy of Science of St. Louis has lost one of its oldest and most actively interested members.

Elected an associate member, February 9, 1857, when the Academy was itself scarcely a year old, Mr. Harrison continued a member to the time of his death. In the early volumes his name appears, again and again, among the donors. Not only did he manifest his interest by gifts to the museum and library, but by many acts of liberality in assisting the Academy in the publication of its Transactions.

In recognition of his interest during his active membership, Mr. Harrison was unanimously elected a patron of the Academy, November 16, 1896.

Your committee, to whom was intrusted the framing of suitable resolutions in commemoration of his services to the Academy, feel that we owe to him a debt of gratitude for his many gifts to the museum and library and for the interest he took in all earnest scientific workers.

(Signed) F. E. Nipher,
G. Hambach,
E. P. Olshausen.

EDWIN HARRISON.

SKETCH OF HIS LIFE BY G. C. BROADHEAD.

James Harrison was born in Bourbon County, Kentucky, October, 1803. He married Maria Louisa Prewitt of Howard County, Missouri, in 1830. He was of north of Ireland extraction and of English ancestry and of strong mental and physical vigor. He early traded in Northern Mexico and from 1834 to 1840 was in business in Arkansas, maintaining several trading establishments in different towns.

In 1840 he moved to St. Louis and in 1843 became part owner of the Iron Mountain property. In 1845 he organized the Iron Mountain Company, which soon became one of the strongest companies of the West. He was a director of the Iron Mountain Railroad Company and also of the Missouri Pacific.

Edwin Harrison, the subject of our sketch, was the son of James Harrison and was born in Washington County, Arkansas. He was also of fine form and physical vigor, strong mind and clear judgment.

When he was four years of age his father moved to St. Louis, which was ever after their home. In 1846 he attended a school in Ste. Genevieve. At the age of twelve he was sent to a school at Namuer in Belgium, where he remained for several years. In 1851 he returned to St. Louis and attended Wymans School for two years. In 1853 he entered the Lawrence Scientific School at Cambridge, Mass., graduating from it in 1856. While there he had for preceptors the great Naturalist and Zoologist, Louis Agassiz, and Asa Gray, the Botanist. He had a great admiration for Agassiz, and with a natural love for Science this association had its effect in his after life. Although often burdened with the accumulation of business, he always loved to further the needs of Science.

In 1873 he married Miss Laura E. Sterne of Glasgow, Mo., who with their two sons and a daughter survives him.

During the last six months of his life he suffered acutely from organic diseases of the heart, and had to keep indoors much of the time. While reading a newspaper at his home, 3747 Westminster Place, death suddenly overtook him. He died Saturday evening, May 13, 1905, aged 69 years.

The Rev. R. A. Holland, Episcopal Minister, officiated at the funeral and spoke with great feeling of Mr. Harrison's career. "His was the example of an active life in which commendation of others had largely entered." His pall-bearers included some of the most prominent citizens of St. Louis.

He was President of the Society for the Prevention of Cruelty to Animals, President of the Historical Society, President of the Mercantile Library Association, President of the St. Louis Fair Association, President of the St. Louis Hospital Association, President of the Academy of Science of St. Louis and a member of the Academy for 48 years. He was a Mason, a member of the Society of Elks, of the St. Louis Legion of Honor, of the American Association for the Advancement of Science, of the American Institute of Mining Engineers, and a member of several other home societies.

He had lived in St. Louis nearly all his life and was identified with her best interests. Long a member of the Academy of Science, he took a leading part in many of its meetings, donating many valuable specimens to its museum. In 1872 he donated to the Society a fine photograph of Agassiz and a life-sized photograph of Dr. B. F. Shumard.

On January 1, 1868, he read before the Academy an excellent article on the age of the porphyries of Southeast Missouri, illustrated by a sketch plainly showing that the Porphyry was of older age than the Magnesian Limestones.

In 1896 the Council of the Academy of Science of St. Louis recommended that, in view of his numerous donations to the Academy, he be elected a Patron. This was voted for unanimously by the members of the Academy. This means a life membership with no payment of fees and is the highest honor that the Society could confer.

Prof. C. M. Woodward of Washington University tells of

the great interest that Edwin Harrison took in the early organization of the Manual Training School. That one morning he asked Prof. Woodward what was needed. He answered that 1300 dollars was needed to secure a competent teacher for the next year. The following morning Mr. Harrison sent him a check for that amount. The next year Mr. Harrison paid the full amount for putting up the Manual Training Building. He was a member of the managing board, and from its organization until his death he was its chairman. His interest in the school never flagged.

In 1858 and 1859 Edwin Harrison was actively employed in the work of the Missouri Geological Survey. In 1858 he assisted Dr. J. G. Norwood and Dr. B. F. Shumard in their geological surveys in southeast Missouri and was with Dr. Norwood in 1859 on his survey in western Missouri. In 1870 Mr. Harrison was appointed by the Governor a member of the State Board of Mines and Geology and served as such until it passed out of existence in 1875.

In 1860–62 he was engaged in merchandizing in Santa Fé. Returning to St. Louis he engaged in iron manufacturing and was the President of the E. Harrison & Co., Manufacturers of Iron. His father dying in 1870, he succeeded to his great accumulation of business. He then became the President of the Chouteau, Harrison and Vallé Iron Co. and owner of the Laclede Rolling Mills.

He was President of the Leadville Branch of the St. Louis Smelting and Refining Works. He was identified with mining enterprises in Montana, was a stockholder in the Granite Mountain Co. and was familiar with the mineral resources from Oregon to Mexico.

With his education, his natural tastes, his vast experience in mining operations and his almost constant association with both business and science, the country has lost a trained geologist and naturalist, as well as a fine business man and a great helper to institutions of learning, a benefactor to mankind.

October 16, 1905.

President A. Alt in the chair; attendance thirty.

The Museum on the third floor was inspected by the members present.

The following donations, received since the last meeting, were reported and the thanks of the Academy expressed therefor: —

Dr. A. Alt: — An Edition de Luxe of Dr. S. A. Binion's magnificent work on "Ancient Egpyt or Mizrain," being a profusely illustrated description of ancient Egyptian monuments and art treasures in four parts.

Mr. H. A. Wheeler: — 79 books and 110 pamphlets, chiefly works on geology.

Dr. and Mrs. Chas. H. Gundelach: — Specimens of rich silver ores (silver chlorides) from San Bernardino County, California.

Mrs. Samuel M. Fields: — A specimen of cinnabar from Southern Texas.

Mr. Frank Schwarz: — A case containing 53 beetles mounted.

Mr. Julius Hurter: — A Gorgonia (Sea-fan) from Nassau, Bahama Islands; also a small shark.

Mr. Geo. A. Winzer: An Indian pipe used by Chief Red Cloud and presented by the Chief to the donor's father in the early seventies.

The following proposition to amend Art. V of the Constitution and Art. XI of the By-Laws was presented.

Art. V of the Constitution, which now reads "The President, the two Vice-Presidents, the Recording Secretary, the Treasurer, the Librarian and the two Directors shall constitute the Council of the Academy," to read "The officers shall constitute the Council of the Academy and at its meeting five shall constitute a quorum."

Art. XI of the By-Laws, which now reads "A vacancy in any office shall be filled by election conducted in the same manner as the annual election," to read "All vacancies shall

be filled by the Council in a regular or called meeting, notice whereof having been given at least two days previously."

Mr. Geo. E. McClure presented some interesting remarks "On the Order Orchidacea," illustrated with striking stereopticon and living specimens from the Missouri Botanical Garden. He gave a description of the culture, hybridization and collection of the plants, including interesting observations on fertilization.

NOVEMBER 6, 1905.

President A. Alt in the chair; attendance eighteen.

Mr. Julian Bagby was elected an active member.

Prof. A. S. Langsdorf delivered a lecture on "Long Distance Transmission of Power."

NOVEMBER 20, 1905.

President A. Alt in the chair; attendance twenty-seven.

Mr. Julius Hurter donated to the Museum a shark's jaw from Nassau, Bahama Islands.

Dr. W. C. Mardorf and Mr. Arthur A. Brown were elected active members.

Prof. C. M. Woodward presented a mathematical analysis on the throws of dice.

DECEMBER 4, 1905.

President A. Alt in the chair; attendance thirty.

Mrs. J. B. Johnson presented a portrait of her husband, Dr. J. B. Johnson, who died October 6, 1903, and who had been a member of the Academy for many years.

Mr. Julius Hurter presented a large shell of a *Tridacna gigas* from Mindanao, Philippine Islands.

Mr. John H. Kinealy, Prof. A. S. Langsdorf and Prof. C. M. Woodward were elected as a nominating committee to prepare a ticket for the annual election of officers.

Dr. A. Alt read a paper by Dr. Casey A. Wood of Chicago on "The Eyes and Eye-sight of the Lower Animals," illustrated by colored stereopticon views.

December 18, 1905.

President A. Alt in the chair; attendance thirty-five.

The nominating committee reported the following ballot for the annual election, which was ordered printed and mailed to the members:—

President	Adolf Alt.
First Vice-President	William Trelease.
Second Vice-President	Joseph Spiegelhalter.
Recording Secretary	Ernest P. Olshausen.
Corresponding Secretary	August Hunicke.
Treasurer	Enno Sander.
Librarian	G. Hambach.
Curators	G. Hambach,
	Frank Schwarz,
	Julius Hurter.
Directors	F. E. Nipher,
	Otto Widmann.

Mr. John H. Powrie of Chicago gave an illustrated talk on the "Florence Heliochromic Plate," being a description of the methods employed in the Powrie-Warner process of practical color photography. The illustrations were colored slides of portraits, landscapes and flower studies, many of the portraits having the appearance of water colors and the flowers showing great detail. Mr. Powrie gave a brief outline of the history of color photography and a scientific explanation of how the plates are colored.

Reports of Officers for the Year 1905.

The President addressed the Academy as follows: —

Gentlemen: The St. Louis Academy of Science is again older by a year, in which as in former ones it and its officers have ever been mindful of the high aims as expressed in its constitution, namely, the advancement of science and the establishment of a museum and library for the illustration and study of its various branches.

This is proven not only by the high order of the papers read at the regular meetings, but also by our published Transactions, which are the lasting evidence of the Academy's work.

Since, through the munificence of Mrs. Eliza McMillan and her son, Mr. W. N. McMillan, the Academy has been put into possession of a home of its own, we have been enabled to unpack a large part of our collection and to display a large number of specimens in an attractive and useful manner in the museum on the third floor. No pain has been spared during the past year by our curators in getting this museum into a presentable condition, at least, as far as our means would permit. The lack of funds and consequently the inability of getting more suitable cases must be blamed for the fact that by far not all of the specimens in our possession have as yet been unpacked and displayed. Yet, thanks to our curators, enough has been done during this year that we can point with some pride to our museum and the public at large is beginning to know of its existence and to show an interest in it.

It will be to our advantage not only to keep this interest alive but also to stimulate it constantly and to draw the attention of the public to the museum, since, more than our scientific labors, it is apt to do missionary work for the Academy. Every one of us, furthermore, when chance offers, should make an effort to increase the size and usefulness of the museum, a fact which was many a time lost sight of in former years when we had no room and the collections were stored away out of sight and in consequence valueless.

We have received a number of valuable donations to the museum during the past year which the curators' report will probably specify to you.

The library, which through our exchanges grows continually, has also received a number of valuable gifts, with which the Librarian's report will make you acquainted.

The lectures at the regular meetings have of late years frequently been of a more popular character, notably in 1904, and in consequence a larger attendance was noted. It is probably due to the fact that during last year fewer popular lectures were delivered that the attendance has dropped from 510 to 404. The largest attendance, 70, was noted on June 5th, the smallest, 12, on April 3rd. The average attendance, which in 1904 was 32, was but 27 in 1905. Since a great many of our members are not personally engaged in scientific work, but take enough interest in it to help the Academy along with their yearly contribution, it seems to be but just that we give a certain number of meetings over to considerations on a broader scale and of a more popular character, which this large number of our members may enjoy and by which they may be attracted to our meetings.

Death has caused the Academy a heavy loss during the last year, not alone in numbers but especially in the character of the deceased, most of whom were members of long standing and of great value to the Academy. Their names were Edwin Harrison, a patron and former President; Emil Preetorius, Chas. Parsons, Wm. H. Pulsifer and Chas. V. F. Ludwig. Including these losses by death, the Academy has lost sixteen members during last year, but gained six new members. Our total membership now is 386, including patrons, honorary, non-resident and corresponding members, a loss of ten since last year.

Since, aside from all other considerations, the loss of a member means a smaller income to the Academy, we cannot too much urge upon our members to exert their influence, not alone to fill this gap as quickly as pos-

sible, but to keep on each as a committee of one and make every effort in their power to get more and more members. With all due economy the expenses of the Academy's household are still such that an increased membership is a necessity. A home of our own has not diminished but increased our expenses. By the renting of available rooms last year's income has been materially added to. Yet, the Academy should at not too far a date be enabled to build fire-proof rooms for the museum and library, and it should furthermore be placed in a position to give financial aid to investigators of special subjects. As we have thus far so signally failed in finding other donors, as disinterested as those to whom we owe this house, an increased membership is almost imperative.

In a few months it will be fifty years since the Academy was organized. As you know it is the intention to celebrate this anniversary in a dignified and appropriate manner. It is to be hoped that most, if not all, the members of the Academy will show their interest in this institution by taking part in this celebration.

In conclusion I wish to thank the other officers of the Academy, who, like all their predecessors, have managed its affairs with zeal and unselfish devotion, and, also, to assure you of my appreciation of the high honor you conferred on a rather unworthy member when you elected me your president. I hope you will forgive my shortcomings.

The Treasurer presented his report for the year 1905, showing the following recapitulation of accounts: —

RECEIPTS.

To Balance Jan. 1, 1905	$1,381 33
Dues from members	1,296 00
Rents	925 00
Interest from capital invested	180 61
Incidentals	1 75
Mortgage	3,500 00
Certificate of deposit	1,030 22
	$8,314 91

EXPENDITURES.

By Printing Transactions	$ 428 68
General printing	117 85
Librarian's expenses	386 91
Improvements	175 43
Salaries	1,080 00
Sundry expenses	356 52
Deposit in bank	1,000 00
Investment	4,530 22
Balance	239 30
	$8,314 91

The Librarian made the following report: —

I have the honor to submit herewith my annual report on the Academy Library for the year 1905.

During the year just closed the Academy received: —

In exchange	books	248	
	pamphlets		1672
By donation	books	103	
	Pamphlets		212

Total increase 351 volumes and 1884 pamphlets.

Publications were received from

Domestic Societies	90	
Foreign Societies	239	
		329

The Transactions of the Academy for the year were sent to

Domestic Societies	163	
Foreign Societies	417	
		580

Societies added to the exchange list during the year

Domestic	1	
Foreign	2	
		3

During the year the following donations to the Library were received: —

Dr. A. Alt. An edition de luxe of Dr. S. A. Binion's magnificent work on "Ancient Egypt of Mizrain," in four parts.

Dr. Enno Sander. Medical pamphlets and journals.

Mr. H. A. Wheeler. 79 books and 110 pamphlets, mostly on geology and mineralogy.

39 volumes were bound at a cost of $26.80.

RECEIPTS AND EXPENDITURES OF THE MUSEUM AND LIBRARY.

General Expenses.

Telephone	$49 90	
Car fare	5 85	
House expenses	22 95	
Office expenses	12 80	
Lecture expenses	3 75	
		$95 25

Library Expenses.

Stamps	$99 84	
Express charges	45	
Boxes for shipping	1 25	
Freight charges	8 90	
Hauling	2 00	
Wrapping paper	2 50	
Binding	26 80	
		$141 74

Museum Expenses.

Chloroform	$ 0 05		
Express charges	4 00		
Shelves	1 65		
Carpenter	9 60		
Removing to third floor	5 25		
Paper trays	5 00		
Show cases	5 00		
Calico for covers	1 38		
Glass in case	1 50		
Inspecting electric lights	1 00		
20 incandescent lights	5 00		
		$39 43	$276 42

Receipts.

Cash received from Treasurer	$249 41	
Cash by sale of Transactions	$20 37	269 78
Balance due		$6 24

The Curators reported as follows: —

The Curators herewith beg to present their annual report for the year 1905.

During the year the progress toward re-establishing the museum of the Academy has been most gratifying. During the vacation the Curators had the museum moved from the small room on the first to the large hall on the third floor of the Academy Building and the collections arranged as far as possible.

The collection of Mound-builder pottery and crania from the southeastern part of Missouri, the butterfly collection, the collection of woods, the meteorites and a large portion of the shell and mineral collections have been placed in cases and labeled. The Yandell Collection, the Mastodon remains, the Indian relics, some shells and many minerals have been placed in drawers but not arranged and labeled for want of cases.

Many valuable specimens saved from the fire have been labeled and placed on exhibition. Among them may be mentioned the burnt brick from the

ruins of Nineveh described in the first volume of the Transactions, a fine specimen of *Bootherium cavifrons*, a species of extinct ox, found in the old Chouteau Pond, many fossils from Hayden's Survey of the Territories, a fine Indian cover and two buffalo skulls, brought from the upper Missouri by Mr. Chas. P. Chouteau in the early days of the fur trade expeditions, and some fine slabs of Melonites from the quarries of St. Louis.

During the year the following donations were received: —

Mrs. Samuel M. Fields: — A specimen of cinnabar from southern Texas.

Dr. and Mrs. Chas. H. Gundelach: — Specimens of rich silver ore from San Bernardino County, California.

Mr. Julius Hurter: — A collection of Molluscs, containing 216 species, represented by 776 specimens; a Gorgonia, a small shark and a shark's jaw from Nassau, Bahama Islands; a large shell of *Tridacna gigas* from Mindanao, Phillppine Islands.

Mr. Henry A. Huston: — A collection of the raw materials from which the products of the Stassfurt Industry are derived — Carnallit, Silvin, Astrakanit, Boracit, Salzthon, Kainit, Hartsalz, Steinsalz, Schoenit and Sylvinit.

Mrs. J. B. Johnson: — A portrait of her late husband, Dr. J. B. Johnson, who died October 6, 1903, and who had been a member of the Academy for many years and its President in 1871.

Mr. Frank Schwarz: — A case containing 53 beetles mounted.

Mr. Geo. A. Winzer: — An Indian pipe, used by Chief Red Cloud and presented by him to the donor's father in the early seventies.

The general condition of the museum has improved materially since the last report, though very much is still to be done in arranging and labeling before the museum can be said to be in shape. A good part of the work cannot be done until we have more cases at our disposal for rearranging some of the collections and placing others, which are now packed, on exhibition.

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Transactions of The Academy of Science of St. Louis.

VOL. XV. No. 1.

OUR PRESENT KNOWLEDGE OF ANCIENT PLANTS.

L. WITTMACK.

Issued February 25, 1905.

OUR PRESENT KNOWLEDGE OF ANCIENT PLANTS.*

PROF. DR. L. WITTMACK, BERLIN, GERMANY.

The original text of my lecture is: "Our present knowledge of prehistoric seeds," but you will allow me to enlarge the theme a little and to speak not only on the prehistoric seeds but on ancient plants in general.

The first question is what sources and what authorities have we for our knowledge of the ancient plants and seeds?

First, we have the ancient literature, especially the Greek and Roman; but it is often very difficult to say what meaning these authors intended to convey by certain words, for instance the word olyra (ὀλυρα) which is rather a word for cereals in general.

We have, further, the wall-paintings in the Egyptian temples and the city of Pompeii, near Naples; also the paintings in the temples of other countries such as Mexico.

Third, we have the sculptural and architectural works which often have attributes taken from the vegetable kingdom; for instance, the sheaves in the hands of Ceres, the olive and the myrtle in the hands of Minerva, or the corncobs fashioned in marble, and other stones in the American and Peruvian temples.

For the middle ages we have a work of Charlemagne, 800 A. D., entitled, "Capitulare de villis imperialibus." In this he gives instructions to his administrators as to which plants should be grown in the gardens of his residences called the Pfalzes (singular Pfalz). Recently a study has been made by a German, Dr. Konrad Plath, concerning these Pfalzes. He has discovered that there were numerous residences of that kind extending from the east of France to Hungary, for all that country belonged to the Empire of Charlemagne.

* Lecture delivered before The Academy of Science of St. Louis, May 2, 1904.

They were usually so situated that the Emperor could leave one "Pfalz" in the morning and pass the night in the next. Charlemagne in his "Capitulare" commands: "It is our wish that the gardens contain all herbs, i. e., lilies and roses, etc." He names many other flowers and vegetables, but he also demands several plants which cannot thrive in Germany, and can only be raised in southern Europe. How did this come about? It is simply because the person (probably a friar) to whom Charlemagne had delegated the compilation of the list of plants, had taken the names from the ancient authors Theophrast and Dioscorides, for it is a remarkable fact that for nearly a thousand years the works of these two Greek authors remained the authorities concerning the entire knowledge of plants. Even six hundred years after Charlemagne's reign all botanists in middle Europe assumed that the plants which Theophrast and Dioscorides* had mentioned were also indigenous to central and northern Europe. They had no conception of the geographical distribution of plants. It was the German botanist Fuchs, in whose honor the Fuchsias are named, who first showed that the plants in Germany are not always the same as in Greece or Italy.

For the *New World* we have especially the letters of the first conquerors and some later publications concerning the natural history of Peru, and America in general. Examples are furnished in the works of Acosta, Garcilasso de la Vega and others which I have studied in the original Spanish text. For North America there are also the reports of the first discoverers and of later travelers, and in our times the interesting studies of the languages of the Indians.†

But all the literary or pictorial sources are not as important, not as reliable as the seeds and other vegetable relics which are found in the sepulchres of the Ancients or in their temples or in the excavated cities of Pompeii, etc.

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* Asa Gray and Hammond Trumbull, Review of Alph. de Candolle's "Origine des plantes cultivées," with annotations upon certain American species. Amer. Journ. Sci., vol XXV, 1883.

† John W. Harshberger, The Uses of Plants among the Ancient Peruvians. Bull. Mus. Sci. and Arts, Univ. Pa., vol. I, no. 3, 1898.

We have now a large number of such prehistoric relics from Egypt, Western Asia, especially from Troy and Anatolia, from different places in Greece and Italy. We have further prehistoric seeds from the tombs of the ancient tribes of nearly the whole of Europe.

In America we have the mounds of the Indians in Ohio, and about St. Louis, the burial places of the Apache, the cliff-dwellers and other Indian tribes in the southwestern border states. Above all, America is rich in the sepulchres of the ancient Peruvians, the Incas and their subjects.

In Switzerland as well as in Northern Italy and other regions have been uncovered the so-called Lake-Settlements or wooden pile buildings ("Pfahlbauten" in German), similar to those still existing in Borneo and the South Sea. In these settlements the inhabitants lived in houses raised on piles driven into the lakes, near the shore, lest the enemy surprise them unaware. All waste products were thrown into the lake and thus produced a valuable source of modern study.

It is nearly the same in the inland of Denmark where the so-called "Kjökkenmödding" (kitchen refuse) are found. These are heaps of refuse. Similar piles of such refuse are also to be encountered in Brazil. The archaeologists search through these waste products like a rag-man picking our modern rubbish, and they reach many valuable results regarding the history of the ancient peoples.

Leading now directly into my theme, I must first remark that we possess to date no vegetable relics of India and Eastern Asia, although it would be of the greatest interest if such were to be obtained.

The oldest source is Egypt with its pyramids and temples. What has been discovered there? Chiefly wheat and barley. You probably are aware of the story that the wheat grains are said to have germinated. What truth is there in this? None whatever. If you plant such Egyptian grains of wheat or subject them to germinating conditions they will sooner or later dissolve like clay in water but never germinate. And yet, such is the report published in an earnest botanical journal, the "Flora" of 1835, p. 3, which report was made

at the meeting of the Society of German Naturalists and Physicians held at Stuttgart in 1834. There the Count of Sternberg showed ears of two wheat plants which he stated had been grown from some ancient grains obtained from Egypt. All botanists admired this display and those who were versed in agricultural botany found that it completely resembled a modern variety termed "Talavera wheat." Talavera is a town in Spain. During Napoleon's invasion of Spain the fine beardless white wheat of that region was transported to France and thence to Germany.

Why did it resemble this particular variety of modern wheat? Nobody asked that question at that time, and hitherto no one in botanical literature has declared Sternberg's wheat story to be false; but the men who assisted at that meeting learned how it happened. The gardener of Count Sternberg, seeing that the grains did not germinate, put some fresh wheat grains in the pot to provide a pleasure for his master. This makes it clear why the wheat of the Ancients à la Sternberg resembled the Talavera wheat. I obtained this interesting information from my old instructor, the famous Professor Alexander Braun, who as a young man assisted at the Stuttgart meeting.

I will add that Prof. Gain* in Nancy has shown some years ago that in all ancient seeds the embryo is detached from the mealy part of the grain, and that it is chemically and anatomically altered and therefore cannot receive nurture. I had previously demonstrated† that corn obtained from the Peruvian sepulchres could not germinate because the embryo is quite brown. In fresh grains of cereals, especially in barley, the embryo contains a nearly liquid fat. In grains which are one or more years old the fat is coagulated. This affords a good means for distinguishing fresh barley from old, if one cannot make a test by germination.

What species of wheat were cultivated in ancient Egypt?

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* Edmond Gain, Sur les embryons du blé et de l'orge pharaoniques. Comptes-rendus 11 Juin, 1900, — Sur le vieillissement de l'embryon des Graminées. Comptes rendus 23 Dec., 1901.

† Reiss u. Stübel, Das Totenfeld von Ancon. Text to Pl. 105–107.

The grains which were first noticed seem all to have been common wheat, *Triticum vulgare*. But about ten years ago Prof. Schweinfurth and last year the German Oriental Society found another species, which is called "Emmer" in German,[1] *Triticum dicoccum* (syn. *Trit. amyleum*). This wheat has, like Spelt, *Triticum Spelta* and single-corn, *Tr. monococcum*, the peculiarity that the ear breaks into pieces when it is thrashed and the grains remain covered by their husks.

This character, that the axis of the ear or panicle is brittle in the ripe state, we find in all wild grains. Therefore we must assume that the so-called Speltwheats are the primitive species of the genus wheat.

Of barley, there has been found mostly the so-called small barley, which has 6 rows in the ear instead of 2 as the large barley. Grains of naked barley are also found and these resemble common wheat. They have sometimes been taken for wheat, but they have 3 rows of albuminoid cells under the shell, which is a characteristic of barley. Wheat, rye, corn, etc., have but one.

The barley served for making beer. Strange to say brewing is not the invention of the Germans but of the Pharaohs. It also served for bread making, and as such for that bread enclosed in the caskets with the dead. Prof. Schweinfurth is of the opinion that even in later times when the Egyptians ate the fine wheat bread, they followed the old custom of placing coarse barley bread in the sarcophagi of their mummies.

Such bread was placed at my disposal for investigation.* It was about 4500 years old and did not at all look like bread. It had had the form of a little cone, but had fallen to pieces.

The color was quite black, resembling asphalt. But when I subjected small portions to microscopic investigation and added ammonia, it turned lighter in color and I could see the epidermis-cells of the husk of the barley, which are so char-

* Wittmack in Sitzungs-Berichte der Gesellschaft naturforschender Freunde, Berlin, 1896, p. 70 with figures. Compare errata, p. 105.

acteristically undulated along the margins. When I washed out the ammonia with water, and added iodine, I found to my greatest surprise that the crumbs turned blue just as is the case with modern starch. When I noted this I exclaimed: Well, indeed, then does starch deserve its name, meaning strength, and most wonderfully has it retained that property for more than 4000 years.

Besides these cereals there were also found lentils, dates, Acacia seeds, the fruits of the Doum-palm, Hyphaene thebaica, etc.

About 1860 the Austrian botanist, Prof. Unger, conceived the brilliant idea of examining the unburnt bricks mixed with hashed straw of ancient Egyptian buildings. He dissolved them in water and by that means found many barley, wheat and small seeds as well as straw, etc.* The best brief account of Egyptian vegetable relics was given by Alex. Braun in a lecture before the Berlin Anthropological Society, published by his pupils, Ascherson and Magnus, in "Zeitschrift für Ethnologie, Berlin," IX (1877), p. 289.

In our day Schweinfurth† has published new researches and has collected quite a number of new specimens other than grain, especially vegetable ornaments of the mummies. Often a wreath is found hung round the neck or lying on the breast of the mummy. This wreath is made in a peculiar manner. A strip of a palm leaf was taken and the single leaves of flowers, especially of the blue water lily, were strung on this strip so that the leaves hung down like the individual parts of many modern necklaces.

I may add that subsequently the ancient Egyptians did not take real bread for their mummies, but made the bread of burnt clay or marble. We find also epitaphs in marble on which different forms of bread are represented, also fruits, a roasted goose, etc. They must therefore have arrived at the conception that this was only a symbol.

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* Unger in Sitzungsberichte der Akademie der Wissenschaften in Wien, Math.-Naturw. Cl., bd. 45, abth. II, p. 75; bd. 54, abth. I, p. 33.

† Schweinfurth, Pflanzenreste aus alt-aegyptischen Gräbern. Berichte der deutschen botanischen Gesellschaft, Berlin, 1884, p. 357.

In Egypt, of course, there have also been found lentils but very rarely broad-beans, *Vicia Faba*.

The priests were not allowed to use them as they were considered impure. Others claimed that the black spot on the flower of the *Vicia Faba* signified death, and that, therefore, the priests should not eat them. The most extensive book on ancient Egyptian plants is that of Franz Woenig, "Die Pflanzen im alten Aegypten," Leipzig, 1886, and for ancient plants in general, that of Dr. Buschan, "Vorgeschichtliche Flora."

In Asia Minor the finds have been specially wheat, barley, peas and similar leguminous seed. In Troy Prof. Virchow, when he was there with his friend Schliemann, — who lived a long time in that country where he gained a fortune which he nobly used in search of ancient cities, — saw to his surprise that outside of one of the walls small grains of carbonized wheat lay in great quantities upon the ground, covering the soil a hand's breadth high. This wheat was extremely small and flat; it has been determined by Prof. Koernicke as *Triticum monococcum*. The leguminous seeds which I received from Troy were small broad-beans, *Vicia Faba*, peas and a kindred species, *Ervum Ervilia*.

In Greece there are not many places where ancient seeds are found. Schliemann collected some at Herakleia, which I had to determine. They proved to be grape-seeds. The day before I departed for this country, I received seeds from Orchomenos, — wheat and broad-beans.

I come now to Pompeii. In April, 1903, I studied the seeds found at Pompeii.* Most of them are in the National Museum at Naples, and some in the small, but exceedingly interesting, museum at Pompeii itself.

As you know, Pompeii was destroyed by an eruption of Mount Vesuvius in 79 A. D., together with Herculaneum, Stabiae and some other small localities. It was covered with ashes and disappeared. In the year 1748 a peasant ploughing his field found some statues and bronzes, which attracted

* I published my researches in Engler's Bot. Jahrbüchern, xxxiii, 1903, Beiblatt No. 73, p. 38. Additions in Gartenflora, 1904, p. 144.

the attention of King Charles III of Naples. He ordered excavations to be made, similar to those which had already been made in Herculaneum, and since that time those marvelous statues, bronzes, and beautiful wall-paintings have been collected, and now form the great attraction of the National Museum at Naples.*

Besides the large statues there are thousands of small household articles such as vases, lamps, mirrors in bronze, and others. A new era in art, especially of art in connection with industry, began, and the most common things of daily life were refined in their forms, in taking the Pompeiian ones as models.

Many seeds and fruits all in a charred state were also found. However, the plants in the wall-paintings drew more attention, and in 1851 the Danish botanist and plant geographer, Schouw, published a popular article concerning them, also including some of the seeds. In his book, "Die Erde, die Pflanze und der Mensch," Leipzig, 1851, German edition by H. Zeise, Schouw enumerates the following plants from the wall-paintings: Pine-nuts, cypress, Pinus halepensis, oleander, ivy, date-palm, dwarf-palm (*Chamaerops humilis*), barley, millet, asparagus, onions, radishes, turnips (rapes), figs, pears, apples, cherries, almonds, plums, peaches, granates, medlars.

Of the seeds found in the excavations, Schouw names sweet pine-kernels, wheat, barley, broad-beans (*Vicia Faba*) and a glass with preserved olives, which he relates had retained their flavor when they were dug out. I have seen perhaps the same olives, which are now in glass tubes, preserved, I believe, in oil.

But Schouw points out that there are many plants lacking, which now form the typical character of the Flora of Italy. Such are, besides the white mulberry, *Morus alba*, now used as food for the silkworm, all species of the genus Citrus, the lemons, the grape-fruits, the citron, a thick shelled lemon,

* There is now also a fine representation of an ancient room from Bosco Reale, near Pompeii, in the Metropolitan Museum of Arts and Science in New York.

and the bitter and the sweet oranges. Schouw concludes, in the words of Goethe: "Italy was at that time not yet the land where the lemons blossom and in the dark groves the golden oranges glow." ("Das Land, wo die Citronen blühn, im dunklen Laub die Goldorangen glühn.")

We cannot imagine Italy without these trees, nor without corn, tomatoes, agaves and Indian figs (*Opuntia*), the two latter now forming the hedges along the railroads. All these plants were introduced recently, relatively speaking. The Cédrat (*Citrus medica*) perhaps 300 A. D., but according to Victor Helm some hundred years earlier. Pliny, who lived about the year 79 A. D., says that they had in vain tried to introduce the Median apple, which is probably this *Citrus medica*. The lemons and the bitter oranges were introduced probably by the Moors in the middle ages and the sweet oranges by the Portuguese after they had discovered China (about the year 1550). Therefore the sweet oranges are sometimes called in Naples "Portogalli," and in Germany "Apfelsinen" which means Chinese apples. The corn, the tomatoes, agaves, and Indian figs were introduced from America.

But you will ask: "What about the golden apples of the Hesperides?" Victor Helm in his famous book "Kulturpflanzen und Haustiere" says that their existence is but a fable. I hesitate to voice a conclusion so decisive. They may have been simply real yellow apples or perhaps yellow quinces, as one variety of the quince was called golden quince by the Ancients, who made no strong differentiation between quinces and apples.

After Schouw nearly thirty years elapsed until a new essay on the plants of Pompeii appeared. This was a scientific treatise on the plants of the wall-paintings by Prof. Comes, who is still Professor of Botany at the Agricultural High School at Portici, near Naples, and the best connoisseur of the varieties of the tobacco-plant. It is published in the great work issued in commemoration of the 1800th anniversary of the destruction of Pompeii, entitled "Pompeii e la regione sotterrata del Vesuvio nell anno LXXIX," Napoli, 1879.

It is also sold separately under the title: "O. Comes Illustrazione delle piante rappresentáte nei Dipinti Pompeiani." Besides those plants which Schouw mentioned, Comes enumerates about 30 others, as is shown in the following list: *Acacia vera*, *Acanthus mollis*, *Agaricus deliciosus*, *Agrostemma Githago*, *Aloe vulgaris*, *Althaea rosea*, *Arundo Pliniana*, *Aster Aurellus*, *Castanea vesca*, *Chrysanthemum segetum*, *Cucumis Melo*, *Cucurbita Lagenaria*, *Cucurbita Pepo*, *Cyperus Papyrus*, *Gladiolus segetum*, *Iris florentina*, *Iris germanica*, *Iris Pseudocorus*, *Laurus nobilis*, *Morus nigra*, *Myrtus communis*, *Narcissus poeticus*, *Narcissus Pseudo-Narcissus*, *Papaver Rhoeas*, *Platanus orientalis*, *Pyrus Cydonia*, *Quercus robur*, *Rosa damascena*, *Ruscus hypophyllum*, *Sorghum vulgare*, *Tamarindus indica*.

Altogether Comes names 50 species and 20 doubtful ones, as many plants of the painting cannot be identified because they are often idealized. We must not expect that all plants which are represented in the paintings grew in Pompeii, for often scenes of other countries, especially of the Nile, were represented.

Whilst Comes paid most attention to the painted plants, I, on the contrary, studied especially the excavated seeds and fruits. I found the following: —

I. CEREALS.

Wheat, in grain and coarsely ground, barley in the same conditions, millet.

II. LEGUMINOUS PLANTS.

Broad-beans (*Vicia Faba*), lentils, peas, and perhaps Lupins or Lathyrus.

III. OTHER SEEDS.

Rape seeds, grape-seeds and perhaps coriander (or hemp-seed), and one peach-stone.

IV. FRUITS.

Figs, olives, almonds, dates, chestnuts, walnuts, hazelnuts, and some preserved fruits, which, perhaps, are cherries and grapes.

V. ROOTS.

Onions and leek.

Nearly all these objects are carbonized and black, only the millet is grayish-yellow. The single peach-stone is also not carbonized, it looks nearly like a fresh peach-stone and perhaps is an accidental find. I may say that almonds and peaches were introduced into Italy scarcely 100 years before Christ.

As to the Cereals, Pompeiian barley does not offer much interest. It appears to be like the Egyptian, the small barley, *Hordeum hexastichum* or *tetrastichum* (*H. vulgare*). The wheat is the common wheat, *Triticum vulgare*, at least, I could not find with certainty the hardy wheat, *Triticum durum*, which is now so often cultivated in Southern Italy because it gives the best Macaroni and Spaghetti. Did the ancient Romans eat Macaroni and Spaghetti? Probably not. At least, Prof. Richard Engelmann, a famous archaeologist of Berlin, told me that not a word is mentioned in any of the ancient scriptures about them. The Ancients had only *Polenta*, a kind of grits (like our oatmeal) which they made of wheat or barley.

Although there was in ancient Italy a great division of labor in other professions, it was not so with milling and baking. The baker ground the grain himself and so we find the mills together with the ovens. The mills have a very peculiar shape. They look like an hour-glass of stone. The upper part of the hour-glass forms the funnel (or millhopper), the lower part rests on a conical projection of the bottom stone. By revolving the hour-glass around the cone the grain is ground. There are also other simple mills consisting only of a hollowed stone in which the grain is coarsely ground with another smaller stone or with a pestle, like in a mortar.

These were probably used by families to make grits or polenta. Strange to say this polenta is now made of Indian corn (maize), which was introduced subsequently from America.

In one oven there were found many loaves of bread. The bread is all quite black, carbonized. The loaves have the form of a sailor-cap with radial furrows on the upper crust. One small loaf in Naples and one in Pompeii show the stamp of the baker.

Of the leguminous plants in Pompeii there are the broad-beans, *Vicia Faba*, which are found very often. Next follow the lentils. The broad-beans are not as large as those now cultivated for food in Italy, being eaten raw or roasted when they are half ripe. The old Pompeiian beans are very small, resembling those which are fed in Europe to the horses and pigeons.

Perhaps the Ancients used them for the same purpose or may have sown them as they do now in Italy for green fertilizer on heavy soil. It is also possible that they added the flour of these small broad-beans to the wheat flour, as they do now in France and Southwestern Germany, when wheat dough will not raise.

The seeds which I consider to be coriander have been taken by others for hemp seed, but I find the form resembles more the former. I should have liked to have investigated that microscopically, but that must be done at leisure. It is very difficult to make sections of these brittle carbonized objects, but I hope that the method which my assistant, Dr. Buchwald, and I found for examining prehistoric woods will also apply to them. We have a very strange method. We burn these black carbonized objects totally to white ashes. We then throw the ashes into melted paraffin or add paraffin directly and after this is solidified, we cut it like butter

I will not speak here about the seeds found in the lake-settlements or in the sepulchres of the ancient tribes in Germany. They are nearly always the same, — wheat, barley, often rye, more rarely oats and millet, small broad-beans, hazelnuts, linseed, small apples and many seeds of wild plants.

I have, however, some interesting things to say about the seeds found in America. In North America we have especially the *Indian corn* or *maize* found in the mounds. It is all carbonized. The cobs of the mounds at Madisonville, Ohio, resemble exactly the common corn, with flat grains like the so-called Virginia corn. Besides maize, in the south-western border states at Los Muertos, Arizona, and in the caves of the cliff-dwellers are found common garden beans (*Phaseolus vulgaris*), small ones, like the so-called pearl beans.

Quite different articles are found in the sepulchres of the ancient *Peruvians*, especially in the ancient cemetery at *Ancon* near Lima.* Here we also find mummies, but they are at the most only about five hundred years old. The dry air permitted the corpses to be preserved without being embalmed. They are in a squatting position covered with blankets, and resemble a bale of goods. In the interior are often found nets with food, for the men at Ancon were poor fishermen, no rich Incas. The women have small baskets with yarn of lama wool and knitting needles of wood, probably that they might be diligent in heaven. The grains are not carbonized, having retained their structure nearly unaltered, being only slightly browned. Many cobs of corn of various varieties are found so well preserved that one can see the single starch grains under the microscope. One variety with thick cobs and naveled grains is probably the origin of the American dent-corn. But to me the most important fact was that there were found two kinds of beans, very large beans, which are

* L. Wittmack. Bohnen aus altperuanischen Gräbern. Verhdl., d. bot. Ver. Neu Brandenburg, bd. XXI, Sitzungsberichte, p. 176 (1879). — "Das Vaterland der Bohnen und der Kürbis." Tageblatt der Naturforscher Versammlung in Danzig, 1880, p. 176. — "Antike Sämereien aus der alten und neuen Welt in ihren Beziehungen zur Gegenwart. Nachrichten aus dem Klub der Landwirte in Berlin, 1881, no. 115. — "Die Heimath der Bohnen und der Kürbisse." Berichte der deut. botan. Gesell., bd. VI, 1888, p. 374. — "Die Nutzpflanzen der alten Peruaner." Comptes rendus du Congrés international des Américanistes, 7 session, Berlin, 1888, p. 325. — Text to plates 105–107 of Reiss und Stübel "Das Totenfeld von Ancon in Peru." Berlin, 1880–1887.

lima beans (*Phaseolus lunatus*, or *P. Pallar*), and our common garden beans (*Phaseolus vulgaris*).

At first I was quite struck to find garden beans, as it was always thought that the garden beans, *Phaseolus vulgaris*, had their origin in the Old World. But Alphonse de Candolle had remarked in his Plant geography, that the garden bean had no Sanskrit name and that the beans of the East Indies all belonged to other species with much smaller seeds, as for instance, *Phaseolus Mungo* and *Ph. radiatus*. When I received the beans through Messrs. Reiss and Stübel from South America, I had not yet seen the beans from Los Muertos, Ariz., and of the cliff-dwellers whose beans I saw at the Chicago Exposition in 1893. In studying the old Spanish literature on America, I found that the conquerors often speak of beans. Garcilasso de la Vega* says of the Peruvians: "They have also three or four kinds of Frisoles, like our broad-beans but smaller" (the Spanish broad-beans, *Vicia Faba*, are very large). Asa Gray and Trumbull in The American Journal of Science, vol. xxv, 1883, say that Jacques Cartier when he discovered the St. Lawrence found the Indians cultivating corn and beans. Lawson in his "Voyage to Carolina," 1700–1708, pp. 76, 77, says that the kidney beans (*Phaseolus vulgaris*) were found very frequently in maize-fields before the Englishman came. So I, at first timidly later positively, declared that the garden beans had their origin in America, which the American studies of Indian languages have confirmed.

The Ancient Greeks and Romans had the word *Phaselos* or *Phaseolus* for bean, but I have often shown that it could not have been our garden bean. Prof. Koernicke of Bonn demonstrated that it was another genus, *Dolichos sinensis*, the cow pea.

I also found very large seeds of pumpkins, *Cucurbita maxima*, and smaller ones, *Cucurbita moschata*. I proved that also the pumpkins came from America and that the squashes of the ancients were bottle-gourds, *Lagenaria vul-*

* Garcilasso de la Vega, Commentar. reales, etc., 1 ed., p. 208; 2 ed., p. 278.

garis. Prof. Fischer Benzon of Kiel has confirmed this, in proving that Pliny insisted that the shell was thick and the hollowed fruits served as jars for wine.

Of the other plants at Ancon I will only mention the peanut, which hails from eastern and western South America, although it is now so widely cultivated in Africa and even in China, that one might easily imagine it indigenous to those countries.

It is the same with the Manioc, *Manihot utilissima*, or Tapioca, which is also so widely cultivated in Africa, even in inner Africa, that one might think its home was there. The roots have been found in Ancon and nobody now doubts that they came from America.

Potatoes have not with certainty been found in Ancon, but sweet potatoes, *Convolvulus Batatas*, and small tubers have been found. Oxalis and cotton were found, but no tobacco or tomatoes. But these are surely American citizens as we all know.

America has furnished to the world tobacco, several species of cotton, potatoes, sweet potatoes, tomatoes, corn, lima beans, garden beans and peanuts. Forsooth, we in Europe have to be most thankful for all these precious gifts.

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A REVISION OF THE AMERICAN PAEDERINI.

THOS. L. CASEY.

Issued April 4, 1905.

A REVISION OF THE AMERICAN PAEDERINI.*

By Thos. L. Casey.

The following revision has been long in contemplation, but it is only recently that the author has felt warranted in beginning the study of so great a multitude of species, most interesting and instructive though they are in their varied structural characters. They indeed form a taxonomic problem hardly less fascinating, though rather less difficult, than that afforded by the still more numerous Aleocharini, the latter being even more diversified in structure and more involved in their relationships with the other tribes of Staphylinidae. But few of our described species are not included in the material serving as the basis of this revision and it is hoped that the relationships of the various genera and species are given with sufficient clearness to enable the student to identify and arrange his material, with a view to the gradual evolution of a more complete and cosmopolitan comparative morphology of the tribe. With this end in view all genera, native and foreign, of which it was possible to procure examples, have been included in the tables, but the only species considered, excepting typical representatives of hitherto undescribed foreign genera, are those which occur in North America above the northern boundary of Mexico.

St. Louis, Mo., Sept., 1904.

PAEDERINI.

The Paederini include all those Staphylinidae, with large anterior coxae, having the fourth joint of the maxillary palpi small and either aciculate, conical or specially modified in structure and the antennae remotely separated and inserted at

* Presented by title before The Academy of Science of St. Louis, February 6, 1905.

the extreme sides of the front under a more or less prominent supra-antennal ridge or tumidity. The Aleocharini, Stenini, Euaesthetini and some Xantholinini have the fourth palpal joint small and aciculate, but the antennae are placed more upon the upper surface of the front, in smaller and more exposed foveae and are less widely separated at base, being notably approximate in the Xantholinini. The Pinophilini, having the antennae inserted as in Paederini, have the fourth joint of the maxillary palpi large and very obliquely securiform; they are therefore not closely related to the Paederini and their reference to that tribe as a subtribal group in the European catalogue of Heyden, Reitter and Weise is not justified in any way.

The general form of the body in this tribe is more or less parallel and moderately to feebly convex; in size they vary from very minute to that of a moderately large *Staphylinus*. The integuments are moderately dense, generally rather sparsely sculptured and with inconspicuous vestiture, except in a few cases, such as the Lithochares and in *Pseudomedon*, where the sculpture and short vestiture become very dense and the surface lustreless. The head is well developed as a rule, but the neck varies greatly in width, more so in fact than in most of the other Staphylinid tribes and forms a valuable taxonomic criterion, as is also the case with the labrum, which is greatly diversified in structure as may be inferred from the generic descriptions of the tables. The fourth joint of the maxillary palpi, although small in size throughout, varies in structure to a remarkable degree as seen in *Gastrolobium*, *Paederus* and *Echiaster*. The ligula may be bilobed, as in the Cryptobia and Lathrobia, fimbriate as in the Lithochares, tridentate as in the Scopaei or unarmed at tip. But comparatively little variation has been noted in the mentum or labial palpi. The gular sutures are greatly diversified and have been employed in the definition of the genera in some of the larger subtribes, such as the Lathrobia and Medones, though within the limits of some others, as in the greater part of the Cryptobia, the Sunii, Stilici and Echiasteres, they are so fixed and uniform as to be of no use in generic classification. These sutures may be either united, forming a single suture, or extremely widely

separated and may be most approximate at base or near the anterior part of the post-oral surface of the head, with all intermediate modifications. When considered broadly the gular sutures undoubtedly form very valuable and reliable generic characters in the Paederini. Such other characters as have been found useful in the definition of genera and species will be mentioned under the more or less detailed descriptions or subjoined notes.

Many of the Paederini have been found in the company of ants of various species and it is quite possible that most of them may be thus associated to a greater or less degree of intimacy at some stage of their existence, but in only a very few cases does this association assume the form of true and life-long symbiosis, as in the case of *Megastilicus* for example. A correspondent — Dr. W. M. Wheeler — recently sent me a specimen of *Hesperobium flavicorne*, with the statement that it had been hatched from pupae found in the nests of *Formica incerta* Emery. Probably in such cases the Staphylinid is an intruder, for the subsequent life-history of the numerous species of Cryptobia and Lathrobia does not appear to be identified in any particular or peculiar way with that of the ants and they have no specialized structures, as is virtually always the case with true ant-guests.

The tribe Paederini is composed as far as known to me at present of twelve subtribal groups, all of which occur within the geographical limits of this revision except the two marked by prefixed asterisks; these subtribes are distinguishable by the following characters: —

Prosternum abbreviated between and under the coxae, forming an acute point which does not attain the mesosternum..... 2

Prosternum prolonged posteriorly in a more or less acute point which attains the mesosternum, but not much dilated under the coxae..... 9

Prosternum attaining the mesoternum and also greatly dilated laterally under the coxae as far as the inflexed sides of the pronotum — hypomera.....10

2 — Antennae anteriorly flexile and strongly geniculate, the basal joint usually very much elongated and having an anterior sinus in its apical margin; anterior tarsi not dilated..... 3

Antennae posteriorly flexile, the basal joint less elongate and with a posterior apical sinus; anterior tarsi variable..... 4

3 — Neck more or less broad; fourth palpal joint distinct, more or less conical.....**Cryptobia**

Neck extremely slender as in *Scopaeus;* fourth palpal joint indistinct, apparently obtuse and more or less pubescent.....***Sphaeronia**

4 — Ligula bilobed at tip; sculpture and vestiture never very dense; labrum never strongly dentate at the middle..... 5

Ligula densely fimbriate at tip; labrum dentate only at the middle; sculpture and vestiture very dense, the surface devoid of lustre..... 8

5 — Fourth joint of the maxillary palpi compressed and lineate at apex and clothed with fine pubescence..... 6

Fourth palpal joint conical, sometimes aciculate, always nude..... 7

6 — Neck very broad; body feebly convex; hind tarsi filiform...***Dolicaones**

Neck narrow; body strongly convex; tarsi with the fourth joint lobed beneath.....**Paederi**

7 — Anterior tarsi always strongly dilated in both sexes, the posterior filiform and simple; body more or less parallel as in Dolicaones and moderately convex as a rule.....**Lathrobia**

8 — Body more or less parallel and feebly convex; anterior tarsi variable.....**Lithochares**

9 — Ligula loosely fimbriate at tip; neck never very slender.....**Medones**

Ligula tricuspid at tip; neck variable but never very broad.....**Scopaei**

10 — Prosternum remaining far below — viewed from below — the level of the edges of the hypomera, with a widely open space between the two surfaces; tarsi filiform, the fourth joint simple; antennae as in Paederi; neck very slender.....**Stilici**

Prosternum approaching very close to the edge of the hypomera in a vertical sense, the opening between them narrow but evident; tarsi short and stout, the fourth joint bilobed; antennae straight, not flexile at the first joint, the apex of the latter not sinuate behind; neck very slender.....**Stilicopses**

Prosternum touching or connate with the edges of the hypomera, the coxal cavities entirely chitinous..... 11

11 — Fourth tarsal joint bilobed; antennae straight, not flexile at the first joint, the apex of which is not sinuate behind; mentum simple; maxillary palpi slender, the third joint elongate and fusiform, the fourth small, obtuse and inconspicuous; neck moderately narrow; integuments moderately dense; species small in size.....**Sunii**

Fourth tarsal joint simple; antennae flexile, the apex of the first joint sinuate posteriorly; mentum usually modified at the sides, sometimes spinose; third joint of the maxillary palpi more or less securiform or otherwise abnormal, the fourth very minute and indistinct; neck usually very slender; integuments thicker and much denser; species generally very small in size.....**Echiasteres**

In the following pages 89 genera are defined in the tables of genera, of which 64 occur within the limits of the United States of America and 25 are exclusively foreign; these latter are distinguished in each case by a prefixed asterisk.

It would be a source of the greatest satisfaction if typical examples of all the American genera described by Dr. Sharp could have been procured, not only for the purpose of arranging them in proper succession with the others, but especially in order to avoid the possible redescription of some of them from our southwestern regions under new and unnecessary names, but this was found to be impracticable and recourse was had to inferences derived from the rather too short diagnoses and poor figures of the "Biologia." * It is probable however that but few synonyms will be found among the genera. It seems scarcely necessary to repeat, in view of what I have already published (Annals N. Y. Acad. VII, p. 353), that *Liparocephalus* and related genera are in no way Paederids but belong to the Aleocharini.

Cryptobia.

The components of this extensive subtribe are the most highly organized and actively predaceous of the Paederini and include some of the largest species of the tribe. They are very poorly represented in the western parts of the old world, extremely abundant and greatly diversified in North and South America and are moderately numerous in eastern Asia, to which regions they probably migrated from North America in rather remote geologic time, for at present the Asiatic genera are all different from those of North America. Their close relationship with the Lathrobia is shown not only by general organization and prosternal structure, but especially by the occurrence of a pleural fold on the elytra, the origin and meaning of which are rather obscure. The absence or

* My failure to secure the rich and varied collection of Staphylinidae brought home from Brazil by Mr. H. H. Smith, was one of the greatest disappointments of my scientific career, for this copious material contains examples of nearly all the tropical American genera, besides a large proportion of the remarkably diversified species of those regions, as I inferred from mounting nearly a thousand specimens forming a sample lot placed in my hands by Mr. Smith for examination. These specimens are probably at present in the Carnegie Museum at Pittsburg with the Smith collection.

modification of this fold in the present subtribe is accompanied by so many peculiarities of habitus or specialized structure as to indicate its really important nature from a generic standpoint, and I have therefore used it as one of the primary criteria both here and in the Lathrobia, where it apparently loses none of its significance. In the Cryptobia the fold is present as a rule and its absence is the exception, while the reverse is the case in the Lathrobia, there being more species in the latter without than with this plication. The anteriorly flexile antennae, with greatly elongate basal joint, and the undilated anterior tarsi, are the only important characters distinguishing the Cryptobia from the Lathrobia, the large conical glabrous fourth palpal joint being common to the two, but in the table of subtribal groups it is necessary for convenience to separate them by a few subtribes having the fourth joint completely different in form, being compressed and finely pubescent. This difficulty of course arises from the practical necessities of a lineal succession in the grouping. The genera represented by material in my cabinet may be defined as follows: —

Gular sutures separated; maxillary palpi coarsely and very sparsely setulose; pleural fold when present never united with the side margin posteriorly 2

Gular sutures united throughout their length from the small triangular postmental piece; third palpal joint finely and closely pubescent; pleural fold gradually becoming fused with and forming part of the side margin posteriorly 12

2 — Elytra with a pleural fold near the side margin 3

Elytra without trace of a pleural fold 7

3 — Pleural fold entire, extending from the humeri to the outer angle of the elytra 4

Pleural fold incomplete 6

4 — Neck entirely unconstricted on the upper and lower surface, feebly constricted at the sides, very broad and but slightly narrower than the widest part of head, the latter elongate and rather depressed, but little narrowed before the eyes which are moderate in size and anterior in position; two post-ocular setigerous punctures — characterizing most of the genera — wholly obsolete; labrum short, edentate, feebly and biobliquely truncate, with a small median sinus; lobes of the ligula large, obtriangular, apparently connate throughout their length, membranous, the basal part corneous; mentum large, trapezoidal, with more than apical half coriaceous, unimpressed at base; gular sutures more widely separated than usual, straight and only very slightly converging

to the base, the basal part of the intermediate surface elevated above the general level; basal joint of the antennae shorter than usual, being scarcely one-half as long as the width of the head; prothorax slightly broader near the base than at apex; elytra longer and wider than the prothorax, parallel; abdomen as wide as the elytra, conically tapering from the apex of the fourth segment; legs moderate, the tibiae strongly spinulose, the hind tarsi long and slender with the basal joint almost as long as the next two combined and much longer than the fifth; integuments smooth, polished and sculptureless above, except the basal parts of the head and the abdomen, which are feebly micro-reticulate, the head and pronotum rather finely, very sparsely punctate, the elytra with widely separated even unimpressed series of extremely fine feeble setigerous punctures. Brazil..... ***Aderobium**

Neck distinctly and abruptly constricted across the dorsal surface; sculpture strong and distinct, the punctures simple..... 5

5 — Antennal joints not constricted at base, obconical, shorter and broader toward tip; elytral suture strongly beaded. Body parallel, moderately convex, moderate to large in size; head oblong, parallel, inflated or narrowed behind the eyes which are well developed, finely faceted, more or less prominent and anterior, the post-ocular foveolae well developed; neck broad, three-fifths to three-fourths as wide as the head, the basal angles of the latter only very rarely obliterated; mandibles tridentate within, the two lower teeth on a broad common base and equal in size, more developed on the left mandible; labrum edentate, short, biobliquely truncate with a shallow rounded median sinus; basal joint of the antennae relatively very moderate in length, not as long as the next three combined; gular sutures fine, becoming very approximate behind the middle; lobes of the ligula rounded, coriaceous or membranous, separate; mentum trapezoidal, large, feebly convex, coriaceous in apical half; prothorax rather small, oblong, always narrower than the head; elytra greatly developed, always longer and wider than the prothorax, usually elongate; abdomen seldom quite as wide as the elytra, the sides parallel, the segments feebly impressed at base; legs moderately long, slender, the hind tarsi elongate with the basal joint usually distinctly shorter than the next two combined but about as long as the fifth. Male with the subbasal ventral segments modified by discal foveae or short transverse setose furrows, the third segment lobed in the middle at apex, the lobe very variable. North and South America..... **Gastrolobium**

Antennal joints not constricted or compressed at base, the elytral suture strongly beaded. Body parallel or anteriorly attenuate, moderately convex; head oblong, parallel, inflated or gradually narrowed behind the eyes, sometimes notably small, the neck broad, three-fifths to three-fourths as wide as the head, the basal angles rounded to the neck or obliterated; mandibles bidentate within; eyes moderately large, anterior, more or less prominent, the facets fine and feebly convex; labrum short, biobliquely truncate, edentate, with a small shallow rounded median sinus; basal joint of the antennae elongate, as long as the next three or four combined; post-ocular setigerous punctures well developed; gular sutures fine and feeble, narrowly separated, most ap-

proximate well behind the middle; lobes of the ligula rounded, separate, coriaceous, their basal parts corneous as usual; mentum large, trapezoidal, obliquely tumid at each side, coriaceous in less than apical half; prothorax oblong, larger than in *Gastrolobium;* elytra parallel, generally longer and wider than the prothorax; abdomen as wide as the elytra or nearly so; legs moderately long and slender, the tibiae not strongly spiculose, the hind tarsi rather long, with the basal joint much longer than the second but not as long as the next two combined and but little longer than the fifth. Male without modification of the subbasal ventrals. Temperate North America.....**Hesperobium**

Antennal joints compressed and constricted at base; elytral suture not beaded. Body stout, parallel, moderately convex, finely and densely punctured; head well developed, as in *Hesperobium* throughout, except that the median emargination of the labrum is larger, deeper and triangular in form; submembranous lobes of the ligula shorter, more diverging and quadrate; mentum very much shorter and more transverse, unimpressed, with only the anterior margin coriaceous, the dividing line being broadly sinuous; gular sutures, neck, prothorax and elytra similar; abdomen as wide as the elytra, parallel, the segments similarly feebly impressed at base; legs much more elongate, moderately stout, the basal joint of the hind tarsi as long as the next two combined and much longer than the fifth. Southeastern Europe.....***Homoeotarsus**

6 — Elytral suture not beaded, the surface not at all impressed along the suture; pleural fold beginning well behind the humeri and not extending to the hind angles; legs moderate in length, rather stout, the tibiae with numerous spicules among the setae; hind tarsi nearly as in *Hesperobium;* prothorax oblong, the elytra longer and wider as in the preceding genera; abdomen rather narrower than the elytra, the segments not impressed; pronotum shining, with rather coarse, circular and very shallow punctures separated by about their own widths, each puncture composed of a small central ring bearing a hair, the ring surrounded by a circle of minute punctules; elytra dull in luster but wholly sculptureless, finely, closely, irregularly punctured, each puncture consisting of an aggregation of minute polished punctules; abdomen finely, not densely punctulate, the surface micro-reticulate. Brazil..***Eucryptina**

Elytral suture strongly beaded, the surface broadly impressed along the beading; pleural fold beginning at basal third or fourth and extending to about apical fourth of the elytra; punctures throughout sparse, simple and impressed, those of the elytra very coarse; head narrow and elongate, the sides feebly, evenly arcuate and strongly converging behind the eyes to the neck, which is less than half as wide as the head, the basal angles obsolete; eyes normal; front not greatly reduced in width; basal joint of the antennae very elongate; labrum rectilinearly and transversely truncate, edentate, with a small parabolic median sinus wider than deep; mandibles long, evenly arcuate, very slender and extremely gradually and finely acicuiate toward tip, having within two large acutely pointed teeth near the middle, the inner margin thence to the base with a narrow membranous margin which is fimbriate with short setae; membranous lobes of the ligula narrow, diverging, somewhat pointed; mentum short, coriaceous only along the anterior mar-

gin, the corneous part strongly, circularly impressed at base; prothorax narrowed anteriorly from near the middle, elongate, convex; prosternum much longer than usual before the coxae; gular sutures, elytra and abdomen nearly as in *Hesperobium;* legs long and very slender, very sparsely setulose, the basal joint of the hind tarsi as long as the next two combined and very much longer than the fifth; integuments throughout highly polished. Southeastern States of America..... **Lissobiops**

7 — Labrum edentate; eyes situated near the middle of the head, the sides behind them rapidly narrowed and evenly arcuate to the neck which is relatively narrower than in *Hesperobium*..... 8

Labrum bidentate; body much smaller in size and generally very slender. 9

8 — Body large and stout, the abdomen inflated, arcuate at the sides and wider than the elytra; head and pronotum in the type minutely sparsely and very inconspicuously punctate, very dull and wholly lustreless because of extremely minute deep closely crowded punctules, each of which is shining at the bottom; elytra polished, sculptureless, with coarse impressed simple punctures irregularly disposed and moderately close-set; abdomen finely, rather sparsely punctulate, rather strongly micro-reticulate but shining; head large and greatly developed; labrum short, truncate, with a very minute and abruptly formed median notch, nearly as deep as wide and broadly rounded at the bottom, with its sides straight and but slightly diverging; mandibles very large and stouter than in *Hesperobium*, bidentate within, the inner edge thence to the base nude and without trace of the membranous fimbria of *Lissobiops*, the left mandible abruptly bent beyond the teeth, the right more evenly arcuate; eyes moderate, just before the middle, the two postocular setigerous foveae distinct, the surface between them elevated, subcarinate and laterally prominent; neck stout and but little narrower than the prothorax and only slightly more than half as wide as the head; basal joint of the antennae much elongated, longer than the width of the prothorax; membranous lobes of the ligula small, rounded; mentum moderate, coriaceous in apical half, not impressed basally, the apical margin arcuate; maxillary palpi long and extremely slender, the third joint six or seven times as long as wide, with perfectly rectilinear sides; gular sutures deeply impressed, very approximate slightly behind the middle; prothorax relatively small, oblong, parallel; prosternum well developed before the coxae, transversely impressed posteriorly; elytra large, parallel, wider than long; abdominal border broad, inclined, the segments impressed at base toward the middle, the third and fourth with a median longitudinal carina crossing the impression; legs long, rather slender, polished and sparsely setulose, the anterior tibiae densely clothed with stiff fulvous hairs in apical half; posterior tarsi long, rather stout, the basal joint almost as long as the next three combined and very much longer than the fifth. Central and South America..... ***Pycnocrypta**

Body moderate in size and convexity, fusiform; punctures throughout simple and small in size; head relatively small in size, the eyes well developed, prominent, slightly behind the middle of the length, the frontal part of the head before them greatly reduced in width; postocular foveolae small, the surface between them feebly tumid and not

laterally prominent; neck about half as wide as the head; basal joint of the antennae longer than in *Hesperobium* but relatively shorter than in *Pycnocrypta;* labrum short, strongly, biobliquely truncate, with a broad shallow rounded median sinus; mandibles slender, finely aciculate apically, evenly and equally arcuate, tridentate within, the outer tooth longer and more aciculate than the other two which are equal; membranous lobes of the ligula rather pointed; mentum large, trapezoidal, coriaceous in apical third, the dividing line transverse and rectilinear; palpi as in *Hesperobium*, the gular sutures rather less approximate but similar in form; prothorax moderate, somewhat narrowed apically, the prosternum long, well developed and unimpressed before the coxae; elytra longer and wider than the prothorax, very feebly impressed along the suture which is scarcely at all beaded; abdomen rather narrower than the elytra, uninflated, the segments not much impressed at base; legs rather long and very slender; hind tarsi with the basal joint as long as the next two. Southeastern States of America.....**Biocrypta**

9 — Neck more than half as wide as the head; eyes submedian in position. 10

Neck much narrower, distinctly less than half as wide as the head; eyes anterior in position..... 11

10 — Body subparallel, moderately slender and convex, strongly and simply punctate, the integuments shining, feebly micro-reticulate, the elytra not minutely sculptured; head moderately developed, the eyes at or slightly behind the middle, the sides parallel behind them to the broadly rounded basal angles; base broadly arcuate-truncate; post-ocular foveolae apparently wanting; neck fully three-fifths as wide as the head; frontal parts before the eyes conspicuously narrower; labrum transversely, rectilinearly truncate, with a small rounded emargination between the teeth; basal joint of the antennae moderate, as long as three-fourths the width of the head, the last joint short truncate and spongiose at tip; lobes of the ligula small, rounded; mentum biobliquely tumid, the apex strongly rounded and coriaceous; gular sutures becoming extremely approximate posteriorly to the base; prothorax about as wide as the head, the sides converging from the rounded apical angles to the base; elytra about as long as the prothorax and wider; abdomen parallel, about as wide as the elytra, the segments feebly impressed at base; legs short but slender, the hind tarsi short, with the basal joint as long as the next two but subequal to the fifth. Panama.....***Cryptobiella**

Body fusiform, slender, rather convex; integuments polished and wholly sculptureless, strongly but not densely, simply punctate; abdomen minutely reticulate and punctulate; head narrow and elongate, moderately narrowed before the eyes, the latter obliquely truncate posteriorly, situated at or just before the middle of the length, the sides behind them converging to the very narrowly rounded basal angles; neck three-fifths as wide as the head; post-ocular foveolae apparently wanting; labrum, palpi and mentum as in *Cryptobiella;* gular sutures rather well separated, straight and parallel, diverging anteriorly and near the base; basal joint of the antennae as long as the next three combined, and though only moderately elongate, nearly as long as the width of the head; prothorax oblong, with the sides parallel and arcuate, wider than the head; elytra wider than the prothorax, with the suture beaded;

abdomen narrower than the elytra; legs slender, the hind tarsi long, only slightly shorter than the tibiae, the basal joint not quite as long as the next two but longer than the last. Europe.....***Cryptobium**

11 — Form narrow, subfusiform, the head small and much narrower than the elytra, only feebly convex, the integuments polished and devoid of minute sculpture throughout, the punctures moderate in size, not very close-set and simple; head oblong, the sides parallel or feebly converging behind the eyes to the broadly rounded basal angles, moderately narrowed before the eyes, which are rounded behind, prominent and situated well before the middle; post-ocular areolae distinct, the surface between them sometimes tumid; labrum nearly as in *Cryptobium;* basal joint of the antennae moderate; neck barely two-fifths as wide as the head, mentum trapezoidal, coriaceous only at apex, deeply impressed along the basal margin; gular sutures becoming extremely approximate behind the middle; prothorax very narrow and elongate-oval, parallel, much narrower than the head; elytra almost twice as wide as the prothorax and very much longer, notably elongate, parallel, the suture strongly beaded; abdomen narrow, the segments feebly impressed at base; legs rather short, very slender, the hind tarsi notably short, the first and fifth joints subequal in length and much longer than the others which are relatively more elongate than usual. Southern North America.....**Ababactus**

12 — Body parallel, rather convex, more or less densely and coarsely but simply punctate; head oblong-elongate, usually parallel at the sides, with broadly rounded basal angles; neck broad, about three-fifths as wide as the head; eyes well developed, convex and prominent, situated distinctly before the middle of the length; basal joint of the antennae as long as the next four combined, the joints not constricted at base; labrum short, truncate, bidenticulate, the teeth separated by a rounded and rather shallow median sinus of moderately large size; post-ocular foveolae large and well developed, rather approximate, the surface between them longitudinally tumid; membranous lobes of the ligula narrow, well separated, arcuate toward each other, the basal parts corneous as usual; mentum large, trapezoidal, flat, the apical part coriaceous, the dividing line posteriorly arcuate; second maxillary palpal joint sparsely setulose, the third rather longer than the second, moderately stout, obconical, with the apex slightly narrowed, the surface dull in lustre, finely and closely pubescent, the fourth joint smaller than usual, acutely conical; prothorax oblong, parallel, narrower than the head; elytra parallel, wider than the head and usually longer than the prothorax, the suture strongly beaded; abdomen parallel, nearly or quite as wide as the elytra, the segments distinctly impressed at base; legs slender, moderate in length, the hind tarsi long, slender, of the usual form, the basal joint as long as the next two and longer than the fifth. Japan .....***Monocrypta**

The majority of the above genera being foreign to our territories, it is necessary to remark upon those thus indicated above before proceeding further: —

Aderobium n. gen. — The structure of the basal parts of the head, short basal joint of the antennae and type of elytral sculpture, isolate this genus completely; it is founded upon the Amazonian *Cryptobium angustifrons*, of Sharp.

Homoeotarsus Hochh. — The remarkable structure of the antennal joints and absence of any well-defined beading of the elytral suture, as well as some minor structural features, such as the form of the mentum, will readily serve to separate this genus from *Hesperobium*, which it strikingly resembles in facies and general organization. The type is *H. chaudoiri* Hoch., a male of which from Lenkoran is before me. The sexual characters are peculiar, the fifth ventral being feebly impressed in the middle and with a very abruptly formed median emargination at the transversely rectilinear apex, the emargination almost exactly circular in form, the opening being narrower than its greatest width; the emargination of the sixth ventral is somewhat as in our *Hesperobium cinctum* Say. It has been stated that the genus *Spirosoma* Mots. — Bull. Mosc. 1858, p. 206 — described from India, is the same as *Homoeotarsus*, but the statement that the tarsi are one-half shorter than the tibiae, with the first four joints triangular and equal, the last as long as the two preceding combined, would seem to indicate generic difference, for even if the tarsus referred to be the anterior, it would not be true of *Homoeotarsus*, where the basal joint is still notably longer than the second. It is also said of *Spirosoma* that the second and third antennal joints are equal in length, the fourth shorter, whereas in *Homoeotarsus* the second joint is much shorter than the third and equal to the fourth.

Eucryptina n. gen. — This genus is founded upon the Amazonian *Cryptobium opacum*, of Sharp, and is described above from a single headless specimen. As the peculiarities of the elytra, referred to in the description, are of generic value, this mutilation is not so important, but the cephalic characters are doubtless also distinctive. There is no trace of the sutural beading and juxta-sutural impressions so characteristic of *Hesperobium*.

Pycnocrypta n. gen. — The type of this genus is one of

the most remarkable Paederids that I have observed. It is very large in size, stout in form, deep black in color throughout the body, legs and antennae, the head and pronotum opaque and with minute sparse punctulation, the elytra one-half wider than the prothorax and equal to the latter in length, equal in width to the head, parallel, with distinctly angulate and broadly exposed humeri, polished surface and coarse deep and rather close-set, irregularly disposed punctures; they are shorter than wide, broadly, feebly impressed toward the suture, with the sutural bead distinctly elevated. The abdomen is remarkable in form and size, as may be inferred from the generic diagnosis. This species — which was named *Crypt. maxillosum* by Guérin, — measures 15.0 by 3.5 mm. in size. The type was given to me by Dr. Geo. W. Bock, of St. Louis, and was collected by him near Guatemala City. *Pycnocrypta* will include also several other large Central and South American forms with broad and inflated abdomen, though differing in great degree from *maxillosa* in sculpture of the anterior parts, — such as the Amazonian *gigas* and *plagipennis* and the Mexican and Central American *ducalis*, *grandis* and *planata*, of Sharp.

Cryptobiella n. gen.* — This is one of the small slender

* I would include in this genus, until its status can be more accurately determined, a species named *Cryptobium pusillum*, by LeConte. This is not before me at present, but some notes and a manuscript drawing taken from the original type many years ago, show that it is narrow, slender, of parallel, compact build, dark rufo-piceous in color, with the pronotum and abdomen less dark, the head not quite as wide as the elytra and but little longer than wide, rather abruptly and strongly narrowed before the eyes which are moderate in size and somewhat prominent, the sides parallel behind them for a short distance, then broadly rounded to the neck, which is rather less than half as wide as the head, — according to the drawing, — the punctures very coarse, deep and close-set throughout, almost mutually contiguous. The prothorax is longer than wide, narrower than the head, with the anterior angles distinct, the sides feebly converging and nearly straight thence to the base, rather closely, coarsely punctate, with a wide, impunctate area bounded by series. The elytra are scarcely as long as wide, parallel, distinctly shorter and much broader than the prothorax, more finely and closely punctate, the punctures subserial toward the suture. Antennal scape as long as the next four joints combined. Male with a small canaliculate impression at the middle of the apex of the fifth ventral, the sixth with a deep parallel cleft three times as deep as wide. Length 5.0 mm.; width 0.8 mm.

types allied to *Cryptobium* in its bidentate labrum, obsolete pleural fold and other structural characters, but is much more strongly and compactly built than either that genus or *Ababactus*. It is founded upon a species sent to me from Colon, in Panama, by Mr. Beaumont, of parallel and moderately slender form, deep black color, with a fine apical border of the elytra and apices of the fifth and sixth abdominal segments testaceous, the antennae pale, the legs extremely pale flavo-testaceous throughout. The head is equal in width to the apical part of the prothorax, and, together with the latter, rather coarsely, deeply and moderately closely punctured; the elytra are rather longer than wide, parallel, much wider than the prothorax and of equal length, less coarsely and still more closely punctured than the anterior parts and distinctly impressed along the strong sutural beading. The abdomen is finely, not densely punctulate and shining like the rest of the surface. Its dimensions are 5.3 by 0.88 mm., and it may be named *colonica* n. sp. It is allied closely to the Central American *Crypt. rostratum*, of Sharp, differing in its rather smaller size, polished abdomen and other minor points and the genus will include also the Amazonian *triste*, of Sharp.

Cryptobium Mann. — The two or three European species constituting this genus are of small size and more or less slender form, with the head notably narrow and elongate, differing from *Ababactus*, to which it is most closely allied, in that respect, as well as in its broader prothorax and smaller elytra, more elongate tarsi, less approximate gular sutures and many other characters of more or less importance. The surface is polished and devoid of minute sculpture, the punctures not very coarse and notably sparse, except on the elytra, where they are close-set and arranged without order. The surface of the elytra is impressed along the rather fine but distinctly elevated sutural bead. The basal joint of the antennae is about as long as the next three joints combined. The prosternum is circularly emarginate throughout the width at apex, with an exposure of whitish membrane — more or less evident throughout the subtribe.

Monocrypta n. gen. — The completely united gular sutures,

forming a coarse and cleft-like stria extending to the extreme base of the head, and more densely pubescent or setulose third palpal joint, are characters which isolate this genus completely, and it is without any very close allies known to me. The general habitus of *Monocrypta* is however not unlike that of several of our common forms of *Hesperobium*. The generic diagnosis is taken from the Japanese *Cryptobium apicatum* and *pectorale*, of Sharp.

Gastrolobium n. gen.

This is by far the most extensive and widely distributed genus of the American Cryptobia and includes some of the largest species. It is abundantly represented in temperate and tropical North and South America but has not yet occurred in the true Pacific coast fauna of North America, a significant fact when comparing the American and Asiatic types of the subtribe. The elytral punctures generally have but feeble indication of serial order, but in some cases, such as *lugubre*, the series are almost perfectly regular, constituting one of the most conspicuous features. The basal joint of the antennae is only moderately long when compared with other genera of the subtribe, being greatly surpassed in length by *Hesperobium* and, to a still greater degree, by *Lissobiops* in that respect. The male sexual characters are more elaborate than perhaps anywhere else in the Paederini, and the lobation of the third ventral segment is a character distinctive of, if not peculiar to, this genus. In at least one Amazonian species this singular lobe is strongly bilobed and there are doubtless many other remarkable modifications. The hind trochanters in the male of another species brought home from Brazil by Mr. H. H. Smith, are greatly prolonged and spiculiform, but I have remarked no such sexual character among our species. The lobe of the third ventral* is not constant in size but

* This is described as the fourth segment by Dr. Horn in his revision of *Cryptobium* (Tr. Am. Ent. Soc., XII), he having mistaken the elevated basal margin of the first segment for a basal segment partially concealed by the coxae, and all the figures of the plates accompanying that paper are erroneously drawn in this respect. As illustrating the true structure of the

diminishes in less developed males and is completely obsolete in others, leaving only the peculiar discal foveae or short transverse setose folds of the second and third segments. The female has the abdomen entirely unmodified as a rule, but in *badium*, *bicolor*, *parallelum* and some others, the discal mark of the second segment — a fovea in some or a transverse fold in others — seems to remain in that sex. The sixth ventral of the male is obtusely rounded at tip or subtruncate. *Gastrolobium* differs very much from *Cryptobium*, under which name all the species have been described thus far, in structure and habitus. The species represented in my cabinet may be identified as follows: —

Head parallel, inflated or moderately narrowed behind the eyes, the basal angles always more or less evident and broadly rounded..... 2
Head gradually narrowed behind the eyes, the sides converging from the latter to the neck and evenly, feebly arcuate throughout, the basal angles wholly obsolete.....24
2 — Elytral punctures close-set, never more than feebly and partially serial in arrangement..... 3
Elytral punctures sparse, very coarse, arranged in even series. 23
3 — Elytra generally pale, rarely black, never pale at tip..... 4
Elytra black, with a fine, abruptly pale testaceous apical margin.....22
4 — Pronotum highly polished, without minute ground sculpture of any kind..... 5
Pronotum alutaceous in lustre, the dullness caused by excessive y minute close-set and regular punctulation, only distinct under comparatively high amplification.....21
5— Head black or piceous-black in color..... 6
Head pale and concolorous with the prothorax and elytra.....16
6 — Prothorax black or piceous-black in color..... 7
Prothorax paler in color and generally concolorous with the elytra..... 9
7 — Head parallel and straight at the sides for one and one-half times the length of the eye behind the latter, the sides thence broadly rounded to the neck. Body moderately large and stout, deep black throughout, the abdomen feebly rufo-picescent; legs very pale, the antennae dusky; head longer than wide, narrower than the elytra in the female, coarsely, closely punctate, the ridge between the post-ocular foveae very pronounced; prothorax oblong-elongate, parallel, with the sides nearly straight, much narrower than the head, the punctures unusually coarse, moderately sparse; elytra slightly elongate, two-fifths wider and nearly a third longer than the prothorax, parallel, the sides straight,

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abdomen the reader is referred to some remarks upon this subject published many years ago by the writer (Bull. Cal. Acad. Sci., II, 1886, p. 159 and plate).

the punctures coarse, rather close-set and irregular in arrangement; abdomen but slightly narrower than the elytra, sparsely but distinctly punctulate, each segment with a large shallow fovea at base and lateral fourth or fifth. Male unknown; female with the abdomen completely unmodified, the sixth ventral obtusely and transversely arcuato-truncate at apex. Length 10.0 mm.; width 1.6 mm. Virginia (Norfolk)..... **virginicum** n. sp.

Head narrowed behind the eyes, the sides converging from the latter to the very broadly rounded and subobsolete basal angles and but slightly arcuate..... 8

8 — Form rather stout, piceous-black throughout; the abdomen not paler at tip, the legs very pale, the antennae dusky except toward base; head longer than wide, much narrower than the elytra, coarsely, deeply and closely punctured; prothorax rather short, but little longer than wide, much narrower than the head, the sides parallel and almost straight, the punctures notably coarse, deep, moderately sparse, unevenly disposed; elytra parallel, about a fifth longer than wide, nearly one-half wider and two-fifths longer than the prothorax, rather coarsely, deeply and closely punctate, the punctures obscurely serial except toward apex; abdomen distinctly narrower than the elytra, strongly, not densely punctulate. Male with a transverse setose discal fold at the middle of the second and third ventrals, the folds equal in size and about an eighth as wide as the segments; lobe of the third segment obsolete in specimens at hand; sixth ventral very obtusely rounded at tip, becoming subtruncate toward the middle, the edge thinned and translucent, the surface notably convex toward the edge posteriorly; female not at hand. Length 9.4 mm.; width 1.5 mm. Florida to New Jersey..... **floridanum** Lec.

Form less stout and rather more convex, the head black, prothorax piceous-black, the elytra dark rufous, the abdomen blackish, rufescent at tip; head longer than wide, subequal in width to the elytra, less coarsely and closely punctate; prothorax distinctly narrower than the head, much more elongate than in *floridanum* and nearly a third longer than wide, parallel and nearly straight at the sides, the punctures less coarse and about equally close-set; elytra much narrower and more elongate, parallel, two-fifths wider and a fourth longer than the prothorax, less coarsely but rather more closely punctate, the punctures without serial arrangement; abdomen almost as wide as the elytra, the punctures distinct and not close-set. Male with a very strongly developed transverse setose fold near the middle of the second and third segments, somewhat as in *floridanum*, the folds larger, nearly a sixth as long as the width of the segment; lobe of the third obsolete in specimens at hand; sixth segment narrower, obtusely rounded at tip, the surface cylindrically and transversely convex throughout, not at all convex toward tip; female unknown. Length 8.0 mm.; width 1.35 mm. New Jersey.

convergens Csy.

9 — Female with the abdomen wholly unmodified; male with a rounded discal fovea on the third, and a transverse fold on the second ventral. 10

Female with a short transverse setose discal fold near the middle of the second ventral, the third and remainder of the abdomen unmodified. 13

10 — Abdomen blackish, brightly rufescent at tip. Body moderately stout, polished, the head black; prothorax and elytra dark rufous; legs pale flavate, the antennae somewhat dusky rufous toward base; head large, longer than wide, parallel, arcuate and somewhat inflated behind the eyes especially in the male, where it is much wider than the elytra, only slightly wider than the latter in the female; tumescent posterior longitudinal ridge at each side distinct; punctures coarse and deep, moderately close-set; prothorax only slightly elongate, much narrower than the head, parallel at the sides, the punctures coarse and rather sparse; elytra unusually small in size, but little longer than wide, parallel and straight at the sides, equal in length to the prothorax in the female and rather shorter in the male and only a fourth or fifth wider, very coarsely, deeply, rather closely punctate, the punctures scarcely at all seriate, each elytron however with two approximate sets of series each enclosing a tolerably distinct smooth line; abdomen fully as wide as the elytra, sparsely and strongly punctulate. Male with an unusually long straight setose discal fold occupying median sixth of the second ventral, the third with a moderate circular setose fovea, the apical lobe parabolic, not extending quite to the apex of the fourth segment and one-third as wide as the apex, bristling with long setae, the sixth ventral conical, evenly, transversely convex, rather narrow at tip, the latter obtusely and broadly rounded. Length 10.5 mm.; width 1.55 mm. North Carolina and Maryland..... **carolinum** Er.

Abdomen uniform in color throughout..... 11

11 — Body and legs very pale flavo-testaceous in color throughout, the head black; abdomen very broad, fully as wide as the elytra. Form stout, parallel; head large, about as wide as the elytra, parallel and slightly arcuate at the sides behind the eyes, the tumescent lateral ridge feeble; antennae very slender, the seventh and eighth joints in the male about two and one-half times as long as wide, ninth not quite twice as long as wide; punctures rather coarse but decidedly sparse; prothorax slightly elongate, much narrower than the head, the sides parallel, somewhat arcuate anteriorly, the punctures moderately coarse, rather feeble and sparse; elytra only slightly longer than wide, parallel and straight at the sides, a fifth longer and one-third wider than the prothorax, the punctures notably coarse, deep, moderately close-set and subserial, the disk shaded slightly darker in color toward the suture; abdomen strongly, not closely, evenly punctulate. Male with a straight transverse setose fold occupying median seventh of the second ventral, the fovea of the third unusually large, a fourth or fifth as long as the entire segment; lobe completely obsolete in specimens at hand, the sixth ventral obtusely rounded at tip. Length 9.0 mm.; width 1.6 mm. Illinois.. ..... **atriceps** n. sp.

Body dark and more or less obscure rufous in color, the head darker; legs more or less pale flavate as usual, the antennae more or less infuscate; abdomen narrower than the elytra.....12

12 — Form moderately stout, parallel; head not quite as wide as the elytra, the sides parallel and straight behind the eyes for some distance, then broadly arcuate to the neck; punctures rather coarse, deep and close-set, separated by scarcely their own diameters; prothorax much narrower

than the head, distinctly longer than wide, parallel, the sides feebly arcuate medially, the punctures coarse and rather close; elytra distinctly elongate, two-fifths wider and a third longer than the prothorax, coarsely, closely and confusedly punctured, the punctures decidedly smaller toward the sides and tip; abdomen finely but strongly, rather closely punctate. Male with a short transverse straight and strongly setose fold behind the middle of the second ventral and occupying about median eighth to tenth of the width, the third with a moderate circular setose fovea before the middle, the lobe large, extending beyond the apex of the fourth, evenly rounded at tip and occupying more than median two-fifths of the width; sixth broadly rounded, the apical margin becoming just visibly sinuate at the middle. Length 8.4–10.5 mm.; width 1.22–1.6 mm. Texas (Houston, Austin and El Paso), Iowa (Keokuk), Indiana, Arizona (Tucson) and California (Needles). **pimerianum** Lec.

Form and coloration similar to *pimerianum*, the punctuation less dense; head well developed, subequal in width to the elytra, parallel and with the sides feebly arcuate for some distance behind the eyes, then broadly rounded to the neck; punctures moderately coarse and not very close-set, separated, except at the sides, by fully twice their own widths; prothorax as in *pimerianum* but more sparsely and feebly punctate; elytra similar and similarly punctured but rather less closely, the abdomen also more sparsely punctulate above and beneath. Male with a transversely arcuate setose fold, much longer than in *pimerianum*, behind the middle of the second ventral and occupying about median sixth of the width; third with a rather larger and more transversely elliptical setose fovea, moderate in size, just before the middle, the lobe obsolete in specimens at hand. Length 10.5 mm.; width 1.6 mm. Iowa. [= *carolinum* Er. (Lec.) — erroneous determination]. ..... **lecontei** Horn

13 — Abdomen black, the last two segments abruptly pale rufous. Body not very stout, the head black; prothorax and elytra bright rufous, the latter usually clouded with piceous toward the suture except at apex; legs pale; head parallel and feebly arcuate at the sides, the basal angles broadly rounded, not quite as wide as the elytra, the punctures rather coarse deep and close-set, separated by slightly more than their own widths; prothorax but slightly elongate, distinctly narrower than the head, parallel, only very slightly narrower at base than at apex, the punctures coarse, strong and rather close; elytra distinctly longer than wide, two-fifths to nearly a half wider and two-fifths longer than the prothorax, moderately coarsely and closely, irregularly punctate; abdomen slightly narrower than the elytra, strongly but not densely punctulate. Male with the setose fold of the second ventral occupying about median seventh, the rounded fovea of the third large, the lobe rather long and narrow, extending beyond the tip of the fourth segment and occupying scarcely more than median third of the width; sixth segment rather narrowly rounded at tip; fold of the second ventral in the female much smaller than in the male. Length 9.8 mm.; width 1.5 mm. New York to North Carolina and Iowa ..... **bicolor** Grav.

Abdomen uniform in color throughout, sometimes very slightly paler at tip..... 14

14 — Body pale flavo-testaceous throughout, the head black. Head unusually small in size, very much narrower than the elytra, the sides parallel and straight, broadly rounded and converging at base to the the neck, the punctures strong and well separated; prothorax distinctly narrower than the head, only very slightly elongate, the sides subparallel, the punctures coarse, impressed, deep, irregular and moderately close-set; elytra unusually large, parallel, only slightly longer than wide, fully one-half wider and longer than the prothorax, the punctures much smaller than those of the latter, rather close-set and irregular; abdomen not much narrower than the elytra, rather coarsely, moderately closely punctulate. Male not at hand; female with the foveiform fold of the second ventral stronger than in *bicolor*. Length 9.0 mm.; width 1.65 mm. New York and Virginia (Newport News).

melanocephalum Er.

Body dark piceo-rufous in color, the head black.....15

15 — Head moderately large but not quite as wide as the elytra, the sides parallel and nearly straight for half the distance from the eyes to the neck, then gradually rounded and converging to the latter; punctures moderately coarse, deep and very close-set, separated by rather less than their own widths; prothorax much narrower than the head, the sides parallel and feebly arcuate, only slightly elongate, the base and apex equal in width; punctures rather coarse, deep, not very close; elytra distinctly elongated, parallel, two-fifths wider and longer than the prothorax, coarsely, deeply, closely and irregularly punctured; abdomen narrower than the elytra, rather finely, not densely punctulate. Male not at hand; female with the straight transverse setose fold of the second ventral occupying about a tenth of the entire width. Length 10.5 mm.; width 1.6 mm. New Jersey.....**badium** Grav.

Head larger, very nearly as wide as the elytra, the sides parallel and more or less arcuate behind the eyes, broadly rounding to the base; punctures not very coarse and separated by about twice their own widths; prothorax as in *badium* but with the punctures sparser and rather feebler; elytra shorter and broader, only slightly elongate, nearly one-half wider and a third longer than the prothorax, the punctures less coarse and distinctly less close-set, irregular throughout; abdomen much narrower than the elytra, the punctures finer and sparser. Male with the fold of the second ventral straight and occupying median sixth or seventh, the fovea of the third transversely elliptical and moderately large, the lobe narrow, parallel and elongate, extending beyond the apex of the fourth, evenly and strongly rounded at tip and occupying less than median third, the sixth small, narrow, obtusely rounded at apex; female with the fold of the second ventral nearly as in *badium*. Length 11.8 mm.; width 1.75 mm. Ohio, Iowa, Missouri and Texas.

strenuum n. sp.

Var A — Similar to *strenuum* but smaller and more slender, the head not inflated behind the eyes, the sculpture throughout similar; prothorax notably smaller, still less elongate, with the sides strongly converging behind the middle, the base being much narrower than the apex; elytra narrower and more elongate, scarcely at all wider than the head. Male unknown; female with sexual characters nearly as in

strenuum, the fold of the second ventral, however, smaller and about a twelfth or fifteenth as wide as the segment. Length 9.7 mm.; width 1.5 mm. Illinois..... **illiniane** n. var.

Var B — Similar to *strenuum* but stouter, the head larger, fully as wide as the elytra, strongly inflated behind the eyes and rounded at the sides, similarly punctured; prothorax small, but little longer than wide, similarly sculptured, the base narrower than the apex as in *illiniane*, but to a much less degree; elytra distinctly elongate, much longer than in *strenuum* and more coarsely and somewhat more closely punctured; abdomen broader, very nearly as wide as the elytra, the punctures coarser and a little more close-set. Male unknown; female with sexual characters nearly as in *strenuum*. Length 10.5 mm.; width 1.8 mm. Texas..... **spissiceps** n. var.

16 — Abdomen black or piceous, with the last two segments pale in color as in *bicolor*.....17

Abdomen uniform in coloration throughout, pale or blackish in color....18

17 — Body rather stout, shining, pale red-brown in color throughout, the elytra sometimes feebly clouded with piceous toward the suture; legs very pale, the antennae infuscate; head well developed but not quite as wide as the elytra, the sides not inflated, parallel, and nearly straight behind the eyes, then broadly rounded to the neck; punctures only moderately coarse and well separated; prothorax slightly elongate, parallel, distinctly narrower than the head, the punctures rather coarse but not very close-set; elytra but slightly longer than wide, parallel, two-fifths wider and a third longer than the prothorax, the punctures rather coarse, wholly confused and moderately close; abdomen slightly narrower than the elytra, polished, finely, rather sparsely punctate. Male with the transverse fold of the second ventral short and broad, occupying about median tenth of the width, the fovea of the third large and circular, the lobe strongly rounded at tip, not extending quite to the tip of the fourth and occupying about median third; sixth segment narrow, evenly and broadly rounded at tip; female with the abdomen wholly unmodified. Length 10.5 mm.; width 1.65 mm. Texas (Galveston) to New Mexico (Albuquerque)..... **texanum** Lec.

18 — Abdomen blackish throughout dorsally, paler beneath; head rather small in size, very much narrower than the elytra, parallel and straight at the sides behind the eyes, the basal angles broadly rounded; punctures as in *texanum;* prothorax as in that species but less decidedly narrower than the head and with the punctures rather feebler; elytra distinctly elongate, much wider and longer than the prothorax, the punctures coarse, deeper and closer than in *texanum*, confused throughout; abdomen slightly narrower than the elytra, finely and not very closely punctured. Male not at hand; female having the abdomen wholly unmodified. Length 9.3 mm.; width 1.6 mm. Arizona... **ventrale** Horn

Abdomen pale in color throughout and concolorous with the remainder of the body.....19

19 — Head very sparsely punctured even at the sides. Body not very stout, parallel, shining, pale red-brown in color throughout, the legs very pale and flavate; head well developed, elongate, only slightly narrower than the elytra, the sides parallel and nearly straight for two-thirds of

the distance from the eyes to the neck, then broadly rounded; punctures moderately coarse, deep, more distinct and perforate than usual, very sparse throughout, the lateral tumidity feeble; prothorax only very slightly longer than wide, distinctly narrower than the head, subparallel and very feebly arcuate at the sides, moderately coarsely, strongly, somewhat closely but irregularly punctate; elytra much elongated, two-fifths wider and a third to nearly one-half longer than the prothorax, the punctures moderately coarse, rather well separated, confused; abdomen distinctly narrower than the elytra, finely, sparsely punctulate. Male with the transverse fold of the second ventral long, about a sixth or seventh as long as the segmental width, the third ventral also with a setose transverse fold but shorter than that of the second, the lobe obsolete in specimens at hand; sixth obtusely arcuato-truncate at tip; female with a transverse setose fold on the second segment occupying median seventh or eighth of the width. Length 9.3 mm.; width 1.5 mm. New York (Long Island), New Jersey and North Carolina. [=*proximum* Csy.].....**parallelum** Csy.

Head closely punctured, at least toward the sides.....20

20 — Third ventral of the male with a short transverse fold. Body moderately stout, parallel, pale and uniform red-brown in color throughout, the legs still paler and rather more flavate; head well developed, about as wide as the elytra, the sides parallel and more or less arcuate behind the eyes, then more broadly rounded to the neck, the punctures rather coarse, separated by scarcely more than their own widths toward the middle of the occiput, the lateral tumescent ridge — between the setigerous foveolae — strong; prothorax distinctly elongate, subparallel, much narrower than the head, the punctures rather coarse but impressed, not very close-set; elytra slightly elongate, much wider and longer than the prothorax, coarsely but not very closely punctate, the punctures confused, becoming sparser and subserial toward the humeral angles; abdomen much narrower than the elytra, finely and sparsely punctulate. Male with the transverse fold of the second ventral very small, shorter than that of the third ventral, the latter also small and occupying about median twelfth of the width, the lobe rounded, extending about to the middle of the fourth in the only male at hand and occupying median fourth of the width, the sixth ventral broadly arcuato-truncate at tip; female with the abdomen wholly unmodified. Length 11.0 mm.; width 1.7 mm. Arizona (Clear Creek Cañon) and Colorado (Cañon City), — Mr. H. F. Wickham.....**coloradense** n. sp.

Third ventral of the male with a small rounded fovea. Form rather more slender than in the preceding, similar in coloration, the sculpture finer and much denser; head rather depressed, not quite as wide as the elytra, the sides parallel for a short distance behind the eyes, almost evenly arcuate thence to the neck, the punctures notably small and close-set, the lateral tumidity feeble; prothorax distinctly elongated, subparallel, much narrower than the head, the punctures rather coarse, deep and moderately close-set; elytra longer than wide, more depressed than usual, much wider and longer than the prothorax, the punctures unusually small but deep and close-set, confused in arrangement, sparser and sublinear near the humeri; abdomen slightly narrower than

the elytra, the punctures fine and rather close. Male with a small but broadly impressed transverse fold near the middle of the second ventral, occupying about median twelfth or fourteenth of the width, the third with the small fovea not broadly impressed but unusually abrupt and perforate, the lobe large, parabolic, extending beyond the apex of the fourth and occupying fully median two-fifths of the width; sixth arcuato-truncate at tip; female with the abdomen wholly unmodified. Length 10.5 mm ; width 1.68 mm. Arizona (Nogales).

arizonense Horn

Var A — Smaller in size and of still narrower form, the head and elytra rather less depressed; head less elongate, with more pronounced basal angles and more prominent eyes; prothorax smaller, with smaller and feebler punctures; elytra similarly sculptured but rather narrower and more elongate; abdomen similar in the female. Length 9.0 mm.; width 1.45 mm. Lower California.....**peninsulare** n. var.

21 — Form rather stout, pale testaceous in color, the elytra still paler and more flavate, the suture broadly clouded with blackish-piceous, the abdomen infuscate or piceo-testaceous throughout; head only moderately elongate, almost as wide as the elytra, alutaceous in lustre, the sides very slightly converging behind the eyes, the basal angles broadly rounded; punctures not very coarse and decidedly sparse; prothorax parallel, much narrower than the head, only slightly longer than wide, strongly alutaceous, the punctures rather small in size but distinct, sparse; elytra distinctly elongate, parallel, fully two-fifths longer and wider than the prothorax, slightly alutaceous, the punctures not very coarse and rather close-set, confused but with two widely spaced close-set series on each elytron in less than basal half, the depression along the sutural bead also linearly punctate as usual; abdomen rather more shining than the anterior parts, slightly narrower than the elytra, finely, rather sparsely punctate. Male with a short, broad transverse fold behind the middle of the second ventral and occupying about median tenth or twelfth of the width, the fovea of the third circular, somewhat perforate and small in size, the lobe large, regularly ogival in outline, extending slightly beyond the apex of the fourth and occupying median two-fifths of the width; sixth obtusely rounded at tip. Length 7.8 mm.; width 1.35 mm. Texas.....**suturale** n. sp.

Form more elongate, dark and uniform red-brown in color, the abdomen black with the apex slightly and indefinitely paler; legs very pale flavo-testaceous, the antennae infuscate; surface alutaceous, except the abdomen which is strongly shining; head rather small, much narrower than the elytra, the sides feebly converging and straight for some distance behind the eyes, the basal angles broadly rounding thence to the neck, the punctures only moderately coarse and not very close-set, rather uneven; prothorax distinctly elongated, narrower than the head, parallel, the punctures not coarse and rather feeble but distinct, more or less sparse; elytra longer than wide, rather convex transversely, much longer and wider than the prothorax, the punctures comparatively small and close-set, confused but with feeble traces of the two smooth longitudinal lines on each elytron formed by approximate series, which is a feature more or less obvious throughout the genus; abdomen narrower

than the elytra, finely, sparsely punctate. Male with a transversely oval setose fovea of moderately large size only slightly behind the middle of the second ventral, the third with a much smaller discal fovea which is well defined and slightly longitudinally elliptical — an exception to the general rule, — the lobe rather small and obtusely pointed, scarcely extending to the apex of the fourth, its sides diverging to the base which occupies scarcely more than a fourth of the width; sixth segment rather strongly, evenly rounded; female with the abdomen wholly unmodified. Length 7.7–8.7 mm.; width 1.3–1.35 mm. Texas (Austin). [= *alutaceum* Fvl., i. litt.].....**vagum** Horn

22 — Body small in size, moderately stout, deep black in color throughout except a fine apical border of the elytra and the legs, which are pale flavo-testaceous; antennae dusky-testaceous toward base; head very distinctly narrower than the elytra, oblong, only very slightly longer than wide, with the eyes unusually large and prominent and less anterior than usual, the sides behind them parallel or very feebly converging and straight to the rounded but unusually distinct basal angles; surface alutaceous as in the two preceding species, closely and finely punctate; prothorax slightly elongate, distinctly narrower than the head, parallel, polished, the punctures coarse deep and close-set; elytra slightly elongate, parallel, much wider and longer than the prothorax, the punctures but slightly less coarse than those of the pronotum and dense, arranged without order; abdomen much narrower than the elytra, alutaceous, finely and not closely punctulate. Male with a fine transverse setose fold at the centre of the second ventral, occupying median eighth or ninth of the width, the third also with a similar though slightly shorter and still finer setose discal fold, the lobe very broad and obtusely rounded, occupying nearly median three-fifths and not extending to the apex of the fourth; sixth broadly rounded at tip; female with the abdomen wholly unmodified, the sixth ventral truncate at tip, with the surface feebly ascending, paler and translucent at the edge. Length 6.8–7.5 mm.; width 1.2–1.28 mm. Florida to Texas (Brownsville).....**despectum** Lec.

23 — Body very small, notably slender and parallel in form, dark testaceous and polished throughout, the legs pale flavo-testaceous; head well developed, distinctly elongate, a little wider than the elytra, parallel and straight at the sides, the basal angles more broadly rounded and the eyes smaller and less prominent than in *despectum*, the punctures coarse and rather sparse; prothorax distinctly elongate, parallel, narrower than the head, still more coarsely and nearly as sparsely punctate; elytra at least a fourth longer than wide, parallel, distinctly wider than the prothorax but only as long as the latter in the female and a little shorter in the male, the punctures relatively very coarse, not close-set, serial; abdomen scarcely narrower than the elytra, rather coarsely, unevenly and not densely punctulate. Male with a rather long and strongly setose fold well behind the middle of the second ventral, the third with a circular perforate discal fovea before the middle, the lobe obsolete in specimens at hand; sixth ventral obtusely rounded at tip; female with a very small transverse setose fold well behind the middle of the second

ventral — otherwise unmodified. Length 6.0 mm.; width 0.8 mm. Florida and Louisiana..... **lugubre** Lec.

24 — Form stouter than in *lugubre* but equally small in size, much less parallel, polished and deep black throughout, rather convex, the legs pale flavo-testaceous, the antennae black with the two basal joints rufous; head elongate, much narrower than the elytra, the eyes moderate in size and prominence, anterior; punctures sparse and moderately coarse; prothorax elongate, distinctly narrower than the head, the sides subparallel and feebly arcuate, slightly narrowed toward apex, the latter being sensibly narrower than the base; punctures rather coarse, not very close-set; elytra well developed, elongate, parallel, two-fifths wider and a third longer than the prothorax, the punctures moderately coarse and close-set and in great part serial in arrangement; abdomen much narrower than the elytra, the punctures strong but rather sparse. Male with a short transverse setose fold behind the middle of the second ventral, the third with a very minute discal fold, the lobe unusually narrow, rather acutely triangular, not extending to the apex of the fourth and occupying apical fifth or sixth of the width; sixth obtusely rounded at tip; female not at hand. Length 6.7 mm.; width 1.08 mm. Florida. [=*parcum* Lec.]..... **obliquum** Lec.

The arrangement proposed above may not give a succession so truly in accordance with natural affinity as that based upon male structural modifications, but it is thought that the characters employed, together with variations of the color scheme, are sufficiently radical and constant to enable the student to place any specimen he may have at hand, irrespective of sex. It is possible, for example, that *parallelum* may be more closely allied to *floridanum* than to *coloradense* or *arizonense*, and it was probably by a hasty examination of the sexual characters alone, that Dr. Horn was led to the conclusion that it was identical with *floridanum;* the form, coloration and sculpture are, however, altogether different, and, other than the similarity in type of sexual characters, there is no close relationship between these two species. The name *proximum* was applied to one of those rather perplexing variations having the elytra less elongate, but it probably does not differ even subspecifically.

At Austin, Texas, I collected a very large series of the widely distributed *pimerianum*, in order to form an idea of the extent of specific variation and find that this is rather surprising and unusual, some of the very small depauperate individuals being proportionately more slender, with the head

sensibly narrowing behind the eyes, so that they would seem to be almost subspecifically distinct, and, if seen in the extremes alone, might be considered specifically different; I notice the same variability, however, in specimens of *texanus* taken at Galveston.

The two species *anceps* and *vitatum* * of Horn, —the only other members of the genus thus far described —are not represented in the material before me, and I am therefore compelled to omit them from the table; the former seems allied to *floridanum* and the latter to *pimerianum*, but differs from this as well as all other of our species in coloration, being testaceous with the last two abdominal segments black, the usual rule in bicolored species being to have the last two ventrals paler than the others. *Anceps* is black, shining, with piceous abdomen, robust in form, with unusually large head, and, like *vitatum*, occurs in southern Arizona. *Convergens* is by no means identical with *floridanum*, as announced by Horn, the two species differing in the sexual modifications of the sixth ventral, the latter being singularly and exceptionally modified in *floridanum* as represented by New Jersey cotypes.

In this genus there are only two really distinct kinds or classes of males and not three as stated by Horn. The first kind has the lobe of the third ventral present in more or less developed degree, and the second has no vestige of lobe but retains the discal marks as perfectly developed as the first. There is apparently no other differential character, though the two classes of males probably play quite different roles in the life history of the species. If the lobe gradually diminished to complete disappearance, there would manifestly be but one class of males having a very variable appendage, but I have never seen an unlobed male presenting any trace of the lobe, and such traces would undoubtedly be seen occasionally if the lobe disappeared in that manner. We are therefore led to the conclusion that there is only a certain amount of variability in the lobe and that the unlobed males must constitute a distinct class of that sex — possibly infertile.

* The significance of this specific name is somewhat obscure. Its repetition several times would seem to show that it is not a misprint for *vittatum*.

Hesperobium Csy.

The dentition of the mandibles will at once distinguish this genus from *Gastrolobium*, there being but two large elongate sharply pointed and much less unequal teeth, instead of the three teeth of the latter genus. The two teeth of the right mandible are clearly and evenly outlined throughout, but the lower tooth of the left mandible has a small shallow notch and vestigial tooth-like inequality of the edge far down on its lower side. The species, which are less numerous than those of *Gastrolobium*, differ considerably from the latter in facies, and, except in a few aberrant forms, in their sombre black or piceous coloration, longer basal joint of the antennae and type of male sexual modification, no trace of the folds, foveae or lobe of the second and third ventrals ever being observable. They appear also to be exclusively confined to temperate and boreal North America, not extending below the Mexican boundary and inhabit the entire country from the Atlantic to the Pacific, being the only genus of Cryptobia, except *Ababactus*, forming part of the true Pacific coast fauna. It is therefore the ancestral stem-forms of this genus, in all probability, rather than the preceding that, migrating in remote times to Asia by way of Alaska, have gradually become the present *Monocrypta*, *Spirosoma*, *Homoeotarsus* and *Cryptobium* of Asia and Europe. The species are tolerably homogeneous but *sellatum*, perfectly normal otherwise, differs greatly in its pale elytra, maculate with black, and *cribratum* and *rubripenne* in some features of form and coloration, as well as the pale, very coarsely and sparsely sculptured elytra, call to mind the remarkable type of *Lissobiops* to be described below. The various species may be distinguished by the characters given in the following table: —

Basal angles of the head more or less evident, the head more oblong; elytral punctures never very coarse, always close-set and never with more than a trace of serial arrangement at any part..... 2

Basal angles of the head obsolete, the sides converging from the eyes to the neck and almost evenly arcuate; neck not more than three-fifths as wide as the head; elytral punctures extremely coarse, sparse and more or less distinctly serial in arrangement; surface polished throughout.....13

2 — Body black or piceous-black in color throughout..... 3
Body black, the elytra bright rufous, with an oblong sutural spot of black. 12
3 — Species of the Pacific coast..... 4
Species of the Atlantic regions..... 6
4 — Form stout, the body large in size, with the head strongly inflated and rounded at the sides behind the eyes, black, the elytra rufo-piceous, the legs pale, the antennae fascous; head large and well developed though distinctly narrower than the elytra, rather coarsely, closely punctate, the eyes moderate in size but convex and prominent; neck but little more than half as wide as the head; prothorax distinctly narrower, slightly elongate, the sides somewhat converging and arcuate anteriorly, widest well before the middle, the punctures moderately coarse, deep and well separated; elytra but just visibly longer than wide, parallel, nearly one-half wider and a third longer than the prothorax, not very coarsely but deeply, rather closely and confusedly punctate; abdomen slightly narrower than the elytra, more finely but very strongly and rather closely punctate. Male with the fifth ventral broadly, feebly sinuato-truncate, the sixth with an abrupt deep emargination, one-half deeper than wide, with the bottom narrowly rounded, its edges with an irregular polished bevel as usual, the surface not impressed; female with the head notably narrower and slightly less inflated posteriorly, the sixth ventral broadly rounded at tip. Length 10.0 mm.; width 1.75 mm. California (San Joaquin Co.).....**tumidum** Lec.
Form more slender, the size smaller, the head never notably inflated behind the eyes, the sides straight, gradually rounding basally to the neck, the latter relatively broader, three-fifths as wide as the head..... 5
5 — Elytra evidently longer and very much wider than the prothorax, black, the elytra sometimes feebly picescent; head rather small, always much narrower than the elytra, moderately coarsely, deeply and rather closely punctured, the eyes moderately prominent; prothorax distinctly, though not very greatly, narrower than the head, much longer than wide, parallel, the sides feebly arcuate and somewhat converging anteriorly, the punctures moderately coarse and deep, confusedly aggregated along the median smooth space and toward the sides as usual; elytra in the male slightly, and in the female more distinctly, longer than the prothorax, fully two-fifths wider, slightly longer than wide, moderately coarsely, deeply, confusedly and very closely punctured throughout; abdomen shining, finely but strongly, rather closely punctate, slightly narrower than the elytra in both sexes. Male with the apex of the fifth ventral very distinctly but broadly sinuate in the middle, the sixth with a very deep, narrowly triangular notch, twice as deep as wide, with the angle rounded; female differing but little from the male in habitus or size of the head, the sixth ventral evenly and circularly rounded at tip. Length 8.0–9.3 mm.; width 1.4–1.55 mm. California (coast regions north of San Francisco).....**pacificum** n. sp.
Var A — Almost similar to *pacificum* but rather smaller, somewhat more depressed and parallel and with the head relatively a little larger, almost as wide as the elytra, the punctures rather coarse, deep and perforate, well separated; prothorax large, much longer than wide, with the punctures still sparser, the sides subparallel, broadly

arcuate, the base a little narrower than the apex; elytra rather less elongate, distinctly wider and longer than the prothorax, the punctures coarser, deeper and less close-set, partially serial in arrangement toward base especially toward the scutellum; abdomen as wide as the elytra, otherwise similar. Male with the fifth ventral feebly sinuato-truncate posteriorly, much more feebly sinuate at the middle than in *pacificum*, the notch of the sixth more parallel-sided, nearly as in *Paederus*, fully twice as deep as wide. Length 8.3 mm.; width 1.38 mm. British Columbia.....**vancouveri** n. var.

Elytra shorter than the prothorax and usually but little wider, the body more slender and much more parallel, black, the elytra somewhat piceous; legs pale, the antennae dusky; head longer than wide, as wide as the elytra, the eyes moderately prominent, the punctures strong, deep, moderately close-set; prothorax more or less distinctly narrower than the head, much longer than wide, the sides feebly converging toward base, broadly arcuate especially anteriorly, the punctures rather large, strongly impressed, not very close-set, aggregated as in *pacificum*, the aggregation along the smooth line usually broadly impressed posteriorly; elytra barely as long as wide, rather depressed, the sides feebly diverging as a rule, the punctures strong and close-set throughout, arranged without order; abdomen as wide as the elytra, finely but strongly, closely punctate. Male with the fifth ventral broadly, feebly sinuate toward the middle, the sixth with an abrupt and very deep triangular emargiuation, not quite twice as deep as wide, its angle broadly rounded; female differing but little from the male in general form, the sixth ventral very broadly, feebly arcuate at tip. Length 8.7 mm.; width 1.28 mm. Southern California and Nevada (Reno) to British Columbia.....**californicum** Lec.

6 — Head inflated posteriorly, the sides behind the eyes parallel and distinctly arcuate; pronotum highly polished throughout, never alutaceous 7

Head not inflated posteriorly, the sides parallel or nearly so and usually straight for some distance behind the eyes..... 9

7 — Male with the apex of the fifth ventral transversely and rectilinearly truncate, with a minute triangular tooth at the middle. Body moderately stout and convex, polished, black throughout, the legs pale, the antennae dusky; head but slightly longer than wide, equal in width to the elytra; the punctures coarse, deep and well separated; lateral tumid ridge strong; eyes scarcely at all prominent, almost entirely visible from above; neck wide, fully three-fifths as wide as the head; prothorax large, slightly elongate, not very much narrower than the head, parallel, the sides feebly arcuate; punctures rather coarse, impressed and somewhat close-set throughout, the median smooth area distinct; elytra but little longer than wide, only slightly wider and longer than the prothorax, parallel, not very coarsely but deeply, very closely and confusedly punctate; abdomen as wide as the elytra, finely, densely punctate, more minutely but rather less densely so beneath. Male with the fifth ventral unimpressed, the sixth with a large triangular notch much deeper than wide, with the angle finely acute and the edges broadly and gradually beveled, the adjoining surface anteriorly not much modified, nor-

mally pubescent and only very feebly impressed; female not differing much from the male, the head a trifle smaller, the sixth ventral broadly and very obtusely rounded at tip. Length 9.8 mm.; width 1.6 mm. Rhode Island to Iowa..... **pallipes** Grav.

Male with the apex of the fifth ventral truncate or feebly sinuate, not dentate 8

8 — Body large in size and stout, black throughout, the legs pale, the antennae dusky; head longer than wide, about as wide as the elytra, the eyes relatively small and only moderately prominent, the punctures strong and rather close-set; prothorax large, longer than wide, parallel, only slightly narrower than the head, the sides feebly arcuate: punctures rather small and moderately close, not so uneven in distribution as in the Pacific coast species; elytra quadrate, parallel, not longer than wide, equal in length to the prothorax in the male, a little longer in the female, about a fourth wider, the punctures rather small but strong, close-set and confused throughout; abdomen as wide as the elytra, finely, densely punctate above and beneath. Male with the fifth ventral feebly sinuato-truncate, the sixth with a large triangular emargination, as wide as deep, the angle acute, the surface in prolongation anteriorly broadly flattened, polished and glabrous; female differing but little, the sixth ventral broadly, feebly arcuate at apex. Length 11.0 mm.; width 1.85 mm. New York to North Carolina, Iowa and Missouri..**capito** Csy.

Body very much smaller, less stout and fusiform, rather convex, polished, the vestiture less conspicuous, black, the prothorax and elytra paler, rufo-piceous; legs and antennae pale flavous; head small, elongate, much narrower than the elytra, only slightly inflated behind the eyes, with the sides broadly arcuate, the eyes well developed but not very prominent, the punctures strong but uneven in size and well separated; neck nearly three-fourths as wide as the head; prothorax large, slightly longer than wide, very nearly as wide as the head in the male and wider than the latter in the female, parallel, with the sides broadly, evenly arcuate, the punctures sparse, moderately coarse, impressed; elytra barely as long as wide, parallel, as long as the prothorax and distinctly wider, the punctures small but strong, confused throughout and unusually well separated; abdomen as wide as the elytra, rather tapering behind the middle, finely, rather sparsely punctate throughout. Male with the fifth ventral evenly and almost rectilinearly truncate, the sixth with a large, evenly triangular emargination which, as in the two preceding species, occupies the entire width of the apex, its sides nearly straight, the angle obtuse, but not distinctly rounded, the notch more than twice as wide as deep, the surface adjoining anteriorly not impressed but with a small dull patch which is minutely and transversely rugulose; female differing but slightly, the sixth ventral narrower and obtusely rounded. Length 7.5-8.0 mm.; width 1.3-1.4 mm. New York ..... **flavicorne** Lec.

9 — Pronotum alutaceous because of a very minute and regular micro-reticulation..... 10

Pronotum highly polished, without trace of minute sculpture of any kind; antennae normal..... 11

10 — Antennae evenly and gradually incrassate throughout from the end of

the first joint. Body rather stout, only moderately convex, subfusiform, black throughout, the legs pale flavate; antennae infuscate, flavate at tip; head moderately small in size, much narrower than the elytra, the sides parallel behind the eyes for a short distance, the sides being almost evenly arcuate from the eyes to the neck; punctures rather coarse and close set; prothorax longer than wide, only very slightly narrower than the head, parallel, the sides feebly arcuate, the punctures small, rather feebly impressed and sparse; elytra slightly elongate, parallel, not very coarsely but strongly, confusedly and closely punctate, much longer and wider than the prothorax in both sexes; abdomen as wide as the elytra or slightly wider, the sides parallel and very feebly arcuate, the punctures strong and close-set, becoming coarse, scabrous and sometimes subconfluent toward the sides. Male with the fifth ventral unmodified, the sixth with a deep triangular notch nearly one half deeper than wide, with the angle obtusely rounded and the opening abruptly formed and half as wide as the apex; female not differing greatly from the male, the sixth ventral narrow, obtusely rounded at tip. Length 8.8 mm.; width 1.6 mm. New York to Wisconsin, Florida and Louisiana. [= *latebricola* Nord.] ..... **cinctum** Say

Antennae rather slender and only just visibly increasing in thickness from the end of the first joint to the end of the sixth, the last five joints abruptly much wider, forming a loose parallel club. Body fusiform, moderately stout, black, the legs pale flavous, the antennae slightly fuscous, gradually paler toward tip; head small, elongate as usual, very much narrower than the elytra, the sides converging and evenly, strongly arcuate from the well-developed but only moderately prominent eyes to the neck, which is three-fourths as wide as the head, the lateral foveolae very deep and conspicuous; punctures coarse and close-set; prothorax slightly elongate, about as wide as the head in the female, the sides parallel and feebly arcuate, sometimes broadly angulate at the middle, the punctures rather small but conspicuous, somewhat sparse and impressed; elytra large, somewhat longer than wide, very much longer and wider than the prothorax, the punctures rather small but very deep and close-set, confused; abdomen as wide as the elytra, nearly as in *cinctum*, but less strongly sculptured. Male unknown; female with the sixth ventral rather narrow, the tip feebly arcuate. Length 8.0 mm.; width 1.5 mm. Florida (Lake Worth).

clavicorne n. sp.

11 — Form moderately stout, rather convex, only slightly fusiform, polished, deep black, the legs and antennae flavate; head small, distinctly elongate, very much narrower than the elytra, the sides parallel and straight for some distance behind the moderately large and convex eyes, then converging and more arcuate to the neck, the punctures less coarse than in *cinctum*, and twice as widely separated; prothorax large, longer than wide, parallel, with the sides evenly and moderately arcuate, slightly wider than the head, the punctures rather coarse, deeply impressed and widely separated; elytra but little longer than wide, slightly longer and wider than the prothorax, the punctures rather coarse, deep and close-set, confused in arrangement; abdomen about as wide as the elytra, tapering posteriorly, finely, rather sparsely punctate throughout. Male

unknown; female with the sixth ventral narrowed at tip; the latter rather strongly, evenly arcuate. Length 8.0 mm.; width 1.4 mm. Texas (Galveston) ..... **atronitens** n. sp.

Form rather slender, feebly fusiform, rather convex, shining, black, the prothorax very faintly picescent; legs flavate, the antennae fuscous, flavate toward tip; head very narrow, parallel and elongate, very much narrower than the elytra, the sides straight and parallel for a long distance behind the eyes, then rapidly rounding to the neck; eyes well developed, moderately prominent; punctures rather coarse and close-set in basal half, the anterior half almost impunctate; prothorax distinctly elongate, as long as the head and slightly wider, the sides parallel and evenly, very distinctly arcuate, the punctures moderate in size, unusually feebly impressed and not at all conspicuous, sparse; elytra distinctly elongate, parallel, only very slightly longer but more distinctly wider than the prothorax, the punctures small but strong, close-set and confused throughout; abdomen as wide as the elytra, gradually tapering posteriorly, finely and not very closely punctate, polished. Male unknown; female with the sixth ventral as in *atronitens*. Length 6.5 mm., width 1.28 mm. Virginia (Norfolk)..... **parviceps** n. sp.

12 — Body stout, fusiform, moderately convex, polished, black, the elytra bright rufous with an elongate parallel sutural spot of black, extending from the base to about apical fourth and slightly dilated behind; legs pale flavate; antennae black, the two basal joints rufous; head narrow and elongate, very much narrower than the elytra, the sides feebly converging behind the eyes and almost evenly, distinctly arcuate from the eyes to the neck, the latter not quite three-fourths as wide as the head; eyes moderate in size and prominence; punctures rather small and moderately close-set, the anterior half subimpunctate; prothorax distinctly elongate, only very slightly narrower than the head, the sides parallel and feebly arcuate; punctures rather coarse, impressed, sparse; elytra large, longer than wide, the sides parallel and feebly arcuate, much longer and wider than the prothorax, the punctures small but strong, close-set and confused; abdomen distinctly narrower than the elytra, finely, not very closely punctate. Male with the fifth ventral not modified at apex, the sixth with an acutely triangular notch nearly three-fourths as wide as the apex and fully as deep as wide; female with the elytra still larger, the abdomen broader and the head not wider than the prothorax, the sixth ventral obtusely rounded at tip. Length 8.4 mm.; width 1.55–1.7 mm. Indiana and Illinois..... **sellatum** Lec.

13 — Form rather stout and convex, shining, black, the elytra rufous with the sutural bead sometimes darker especially at base; legs rufous, the antennae dusky, rufous at base; head elongate, much narrower than the elytra, the eyes rather prominent; punctures moderately coarse, rather shallow and extremely sparse; prothorax much elongated, narrower than the head, parallel, the sides feebly arcuate, the apex slightly narrower than the base; punctures moderately coarse, shallow, impressed, very sparse, with a more regular series along the smooth median area; elytra slightly elongate, parallel, scarcely longer but distinctly wider than the prothorax, the sides feebly arcuate; punctures very coarse, impressed, sparse and only partially serial; abdomen as wide as the elytra

or very nearly so, parallel, finely, rather closely punctate but shining. Male with the fifth ventral unmodified, feebly sinuato-truncate at tip, the sixth with a triangular emargination, much wider than deep, occupying three-fourths of the apex with its angle well defined and not rounded, the notch gradually formed with broadly rounding sides posteriorly; female having the narrow sixth ventral arcuato-truncate at tip. Length 8.7 mm.: width 1.5 mm. Massachusetts and New Jersey.

cribratum Lec.

Form similar but more slender, convex, polished throughout, black, the elytra bright and paler rufous, with a small black scutellar spot; legs pale flavate, the antennae dusky, flavous toward base and apex; head elongate, much narrower than the elytra, almost wholly impunctate toward the middle throughout the length, very sparsely punctured toward the sides; prothorax nearly as in *cribratum*, very remotely and rather feebly punctate, the sides more converging anteriorly, the apex distinctly narrower than the base; elytra but little longer than wide, as long as the prothorax but much wider, the punctures scarcely as coarse as in *cribratum* and very much sparser, rather distinctly serial throughout; abdomen slightly narrower than the elytra, finely, rather closely punctate, with the pubescence much more distinct than elsewhere as in *cribratum*. Male with the fifth ventral unmodified as in *cribratum*, the sixth with a narrower and deeper triangular incisure, about half as wide as the apex, less gradually formed and much deeper than wide, the angle at the bottom narrowly rounded. Length 7.7 mm.; width 1.3 mm. South Dakota (Volga).....**rubripenne** n. sp.

There may be several closely allied forms in the Pacific coast region besides the very distinct *tumidum*, but it seems best to recognize only two species as known by material already collected, one — *pacificum* — with large elytra, much longer and wider than the prothorax, and the other — *californicum* — with small elytra, about as long as the prothorax and but little wider. To the first I have attached a subspecies based upon differences of facies and slight modifications of the male sexual characters. The other also appears to have some slightly modified derivatives or subspecies, but they are not defined at the present time, it being better to leave this difficult investigation for a future study with more ample material. The last two species of the table are aberrant and suggest *Lissobiops* in certain special characters, such as the more apically narrowed prothorax and coarse, sparse sculpture. *Properum* of Horn, which is the only described species not represented before me, appears to be more closely related to *Cryptobiella*, as shown by the original description;

it is a small species about 7 mm. in length and occurs in Arizona. I have never seen it.

Lissobiops n. gen.

The very fine and rather rare species named *Cryptobium serpentinum* by LeConte, is distinguished from any known form of *Hesperobium* by four characters of greater or less importance, which together appear to demand generic separation. The most important of these characters is probably the medially interrupted side-margins of the pronotum, the latter being bounded laterally by a continuous fine reflexed bead in *Hesperobium*. The second is the imperfect pleural fold of the elytra, which comes far from attaining the infrahumeral part of the inflexed sides; the third involves the narrow neck, which however is probably of less significance in this case than would seem apparent and the fourth concerns the general scheme of coloration, which is unique among our Cryptobia, and, bearing in mind the extreme constancy of the color scheme in some other parts of the Paederini, such as *Paederus* for example, this character, which so affects the general habitus of the species, is probably of considerable importance from a generic viewpoint. *Lissobiops* resembles *Hesperobium* in its bidentate mandibles, but the basal joint of the antennae is even longer than in any species of that genus. The single species known thus far may be described as follows:—

Body slender, convex and fusiform, highly polished throughout, pale testaceous in color, the anterior two-fifths of the head, the prothorax, a subquadrate spot at the scutellum and the entire first, fifth and sixth ventrals deep black; legs extremely slender, pale flavate; antennae flavo-testaceous, joints two to six black; head narrow, elongate, subrhomboidal, moderately narrowed before the eyes, which are moderate in size and prominence, the basal joint of the antennae rather longer than the next four combined and almost as long as the extreme width of the head; punctures small, very feeble and extremely sparse throughout; prothorax elongate, narrower than the head, rather strongly narrowed anteriorly from the middle, the sides arcuate, the apex much narrower than the base, the punctures feeble, very remote, with a more close-set series along the broad median impunctate area; elytra not quite as long as the prothorax but much wider, slightly elongate,

wider than the head, parallel, the punctures coarse, deep, sparse and serially arranged; abdomen distinctly narrower than the elytra, feebly and very sparsely punctate. Male with the fifth ventral unmodified, the sixth with a triangular, gradually formed emargination, fully half as wide as the apex and fully as deep as wide, with the angle not very obviously rounded, the surface along the sides and before the notch sometimes very feebly impressed. Length 8.0 mm.; width 1.28 mm. North Carolina (Asheville).....**serpentina** Lec.

I was fortunate enough to find two males of this species in the mountains of western North Carolina some years ago. There is undeniably a rather closer relationship in many important features between *Hesperobium cribratum* and *rubripenne* and this species than there is between those species and the normal species of *Hesperobium*, but on account of the formation of the pleural fold of the elytra and side margin of the pronotum, as stated above, the two former are attached for the present to *Hesperobium*. It may, however, ultimately be deemed more proper to consider *Lissobiops* as a subgenus of *Hesperobium* and assign to it the three species, *serpentina*, *cribrata* and *rubripennis*.

Biocrypta n. gen.

This genus is more closely related to *Gastrolobium* than to *Hesperobium*, because of the tridentate mandibles and the fact that the second or third ventral bears sexual marks, not of the same character as in the former genus, however, but distinctly different as may be seen from the description given below. These facts lead to the query whether it would not be preferable to base the generic characters of the subtribe primarily upon dentition of the mandibles, rather than upon the presence or absence of a pleural fold of the elytra. The type of *Biocrypta* differs completely in facies from any known form of *Gastrolobium*, and its fusoid form suggests rather *Hesperobium* at first glance, but in the form of the head it differs radically from either; it may be described as follows: —

Fusiform, rather stout and only feebly convex, pale and uniform red-brown in color throughout the body, legs and antennae, the head and

abdomen alutaceous and micro-reticulate, the elytra still duller and finely rugulose, the pronotum polished and devoid of minute sculpture; head small, scarcely longer than wide, very much narrower than the elytra, the punctures moderately large, coarser than elsewhere and well separated; basal joint of the antennae a little longer than the next three combined, the third much longer than the second or fourth, which are equal; prothorax but slightly elongate, much narrower than the head, the sides feebly arcuate, the apex much narrower than the base; punctures fine and sparse, feeble and inconspicuous; elytra slightly longer than wide, large, parallel, one-half wider and two-fifths longer than the prothorax, finely, rather feebly, very closely and confusedly punctate; abdomen nearly as wide as the elytra, rather tapering posteriorly, finely, feebly and rather closely punctulate. Male not at hand; female with the second ventral unmodified, the third with a small rounded and feebly elevated flattened tubercle before the middle, the apex simple; fifth and sixth segments each with two widely separated larger setigerous punctures on the disk behind the middle, the latter arcuato-truncate at tip. Length 8.3 mm.; width 1.45 mm. Texas.....**prospiciens** Lec.

According to Horn, the male has the third ventral lobed, but as this lobe seems to vary noticeably in form among the very few known examples, there may be several closely allied species of *Biocrypta*. As might be anticipated from its affinity in many directions with *Hesperobium*, the sixth ventral in the male is angularly emarginate, differing in this way from any known species of *Gastrolobium*.

Ababactus Shp.

The comparatively minute delicate species assigned to this genus, inhabit the warmer parts of North America and form the closest approach in our fauna to the European *Cryptobium*. At the same time they differ very much from *Cryptobium* in general habitus, and the two genera are not very closely allied. The species described by LeConte under the name *Cryptobium lepidum* is in every way congeneric with the west coast *Ababactus pallidiceps* and appears to be a typical *Ababactus*, although I have not seen the type species, but its true affinities were overlooked by Dr. Horn in his revision of *Cryptobium*. The two species represented in my cabinet may be readily identified by the following characters: —

Form slender, fusiform, rather depressed, polished, blackish-piceous in color, the head testaceous, with an infumate cloud at the centre of the vertex; legs pale flavate, the antennae dusky rufous at base; head strongly, moderately closely punctate; basal joint of the antennae as long as the next three; prothorax slender and much elongated, much narrower than the head, the sides parallel, broadly and distinctly arcuate, the apex and base subequal in width; punctures finer than those of the head, rather sparse, confused, the more regular close-set series along the median smooth space somewhat impressed; elytra fully two-fifths longer than wide, parallel and straight at the sides, fully three-fourths wider and two-fifths longer than the prothorax, the humeral angles distinct, the punctures fine, close-set and altogether confused in arrangement; abdomen slender, much narrower than the elytra, finely, not very closely punctate. Male with a small, deep, circular fovea just before the centre of the second ventral and two entirely similar foveae at basal third of the third ventral, the latter separated by an eighth or ninth of the entire width; fifth segment broadly and very feebly sinuate toward the middle, the sixth with a narrow and very deep cleft, bordered along its sides by a narrow deep gutter, the two uniting at the bottom of the cleft, forming a deep excavation which attains the base of the segment, gradually narrowing to a very fine gutter near the base, the posterior angles of the cleft rounded, the emargination nearly four times as deep as its median width, the bottom obtusely rounded; female with the fovea of the second ventral wanting, the two foveae of the third completely as in the male, the fifth arcuato-truncate, the sixth narrow but broadly arcuato-truncate and simple at apex, the abdomen a little broader than in the male and the head somewhat narrower and more elongate. Length 4.6 mm.; width 0.7 mm. California (north of San Francisco) ..... **pallidiceps** Csy.

Form nearly similar but rather stouter, polished, pale brownish-testaceous throughout, the legs but little paler, the antennae scarcely at all dusky; sides of the head behind the eyes feebly converging to the broadly rounded basal angles; punctures finer, sparse; antennae longer and more slender, nearly half as long as the body, the basal joint similar; prothorax slender, elongate, much narrower than the head, the sides parallel, nearly straight, rounding and more converging anteriorly, the neck scarcely more than a third as wide as the head, the punctures fine, feeble and rather sparse, the series as in *pallidiceps;* elytra as in that species but still more finely punctate, fully four-fifths wider than the prothorax and more than two-fifths longer; abdomen relatively a little wider though much narrower than the elytra, finely but distinctly, rather more sparsely punctate. Male with the second ventral wholly devoid of any trace of fovea, the third with two foveae exactly as in *pallidiceps*, the fifth arcuato-truncate at tip, with a small shallow and much more abruptly defined median sinus, the sixth with a narrow very deep cleft surrounded by a deep gutter as in *pallidiceps;* female not at hand. Length 4.2 mm.; width 0.75 mm. Texas ..... **lepidus** Lec.

The species described by Horn under the name *Ababactus nactus*, I have not seen, but would infer from the description

that it differs from *pallidiceps* in its sparser punctuation of the head, finer and denser punctures of the elytra, in its less elongate prothorax and much less elongate elytra, which are said to be scarcely longer than the prothorax; it occurs in Arizona. *Pallidiceps* is much more closely allied to *lepidus* than to *nactus*, but is a larger species with relatively narrower head and darker coloration, besides differing in the male sexual characters.

Sphaeronia.

The chief characteristics of this subtribe are the extremely slender neck, formed nearly as in *Stilicus* and *Scopaeus* and the small obtuse fourth palpal joint. These features are entirely foreign to the Cryptobia and also to the related Lathrobia and are correlated with so many peculiarities of structure as to indicate the propriety of separating these minute, frail and extremely interesting forms as a distinct subtribal group, for which I would propose the above name. The group is probably peculiar to the American tropics, and, in addition to the two genera here defined, will probably include several others when those almost inexhaustible regions are more thoroughly explored. The two following genera are defined upon examples kindly given me several years ago by Dr. Sharp, by whom they were originally described: —

Body less slender, almost as in *Ababactus* but more convex, moderately shining, very minutely punctured; head elliptically rounded at base behind the eyes, which are moderate or rather small and slightly prominent, placed at the middle of the sides, the frontal part before them abruptly narrowed to a moderate degree, the antennal prominences large and pronounced; labrum short, truncate, edentate, with a semicircular median emargination; surface more coarsely and confluently sculptured in anterior half, finely and sparsely punctate posteriorly, the two postocular foveolae of the Cryptobia distinct, the surface between them feebly swollen; mentum transverse, biobliquely tumid; maxillary palpi normal in form, the third joint obconical, longer than the second, finely, closely pubescent; gular sutures narrowly separated, parallel, feebly diverging anteriorly; antennae rather stout, the joints closely joined, the first nearly as long as the next four combined, strongly sigmoid, stout and finely, closely pubescent, the second much longer than the third; prothorax long and narrow, much narrowed anteriorly to the neck; prosternum elongate before the coxae, broadly, transversely impressed

anteriorly, feebly carinate posteriorly; pronotum very convex, extremely minutely punctate, without much more than a narrow trace of a smooth median line, the surface prominent at the middle near the base and bi-impressed as in Scopaei; elytra much wider than the prothorax, nearly as wide as the head, closely punctate, the sutural bead evident; abdomen rather narrower than the elytra, the segments only feebly impressed at base; legs long, very slender, the tarsi long, filiform, the first and fifth joints elongate; sexual characters of the male consisting of feeble transverse folds on the second and third ventrals and apical emargination of the sixth. Amazon.....***Scopaeodes**

Body very slender and of remarkably specialized structure throughout, scopaeoid in form, moderately convex, shining, finely, inconspicuously punctured, the head more coarsely and sparsely so throughout but more coarsely anteriorly than posteriorly; coloration pale; head elongate-oval, not abruptly narrowed before the eyes which are before the middle, rather small, prominent and very coarsely faceted; posterior outline semicircular, the median part of the base forming an abruptly projecting collar inclosing the neck; sides without post-ocular foveolae but with a deep longitudinal groove extending along the lower margin of the eyes, and gradually becoming attenuated to the neck; upper margin of the eyes also bordered by a deep groove which does not extend behind the eye; front strongly tritumorose; labrum very short, biobliquely and rectilinearly truncate, with a feeble median sinus, edentate; mentum very small; labial palpi slender, normal; maxillary palpi strongly specialized, the second joint slender, the third strongly inflated and rounded in outline but abruptly constricted at base and obliquely joined to the second by a slender peduncle; gular sutures completely united, forming a fine median stria anteriorly becoming a broad coarsely impressed groove posteriorly; mandibles bidentate within, the left at least strongly grooved externally; antennae rather thick, submoniliform, the basal joint cylindrical, thick and not much longer than the next two combined, the second and third subequal; prothorax elongate-oval, gradually attenuate anteriorly; prosternum extremely long before the coxae, almost evenly and strongly convex; pronotum tumid in the middle near the oase, the median impunctate line obvious; elytra wider but not longer than the prothorax, the sides diverging, obscurely punctulate, the surface impressed at each side of the suture toward base only; abdomen narrower than the elytra, the segments feebly impressed at base; legs moderately slender but not very long, the anterior tibiae strongly, obtusely dentate within, the intermediate slender and cylindric, the posterior gradually thicker from base to apex, the tarsi rather long, slender, the basal joint of the posterior about as long as the next two together but much shorter than the fifth; claws well developed. Amazon. [= *Sphaerinium* Shp. — nom. praeocc.]..***Sphaeronium**

The name *Sphaeronium* was substituted for the original *Sphaerinium* by Dr. Sharp, and the genus is founded upon a species described under the specific name *pallidum* by that author. The type of *Scopaeodes* — a name somewhat unfor-

tunate in view of the lack of any real affinity with *Scopaeus*,— is *S. gracilis* Shp. The latter is 5 mm. in length, the former not much shorter but notably more slender.

Dolicaones.

This subtribe combines in a remarkable manner the essential characters of the Paederi and Lathrobia, agreeing with the former in the general nature of the male sexual characters and in the peculiar compressed and pubescent fourth joint of the maxillary palpi, and with the latter in general habitus, structure of the prothorax and other features. The genera are few in number and belong wholly to the old world fauna in all probability. Those represented in my cabinet may be defined as follows: —

Eyes normal and well developed 2
Eyes wanting, replaced by a small whitish translucent point at the posterior margin of the antennal cavity 3

2 — Body very large, rather stout and parallel, moderately convex, coarsely, rather sparsely punctate, the pronotum with only a partially defined median smooth line, the abdomen with coarse sparse punctulation; hairs long and bristling; head large, oblong, the neck very broad, nearly three-fourths as wide as the head; labrum short and transverse, with a small triangular emargination, at each side of which there are two very short obtuse denticuliform lobes; antennae filiform, rather stout, barely as long as the head, the joints feebly obconical, the basal joint cylindric, but little longer than the next two combined; gular sutures feeble, rather narrowly separated, gradually converging and most approximate behind the middle, rapidly diverging and obsolescent at base; ligula bilobed at tip; paraglossae compressed, fimbriate at tip; maxillary palpi moderate in length, rather slender, coarsely, sparsely setulose; prothorax large, oblong; prosternum short before the coxae; elytra very short, less than half as long as the prothorax, with rounded basal angles, the hind wings probably wanting or vestigial; abdominal segments only very feebly impressed at base; legs rather long, somewhat slender; hind tarsi nearly three-fourths as long as the tibiae, densely clothed with stiff fulvous hairs beneath, the first joint much longer than the second and subequal to the fifth; claws moderate; anterior tarsi moderately dilated. South Africa. [= *Ophiomorphus* Dej. and *Adelobium* Nord.] ..... ***Dolicaon**

Body small in size, subparallel and slender, moderately convex, rather finely, sparsely and evenly punctate, the pronotum with a smooth median line; abdomen not densely punctulate; pubescence short and inconspicuous; head moderate, usually narrower than the pro-

thorax, oblong, the neck very wide, four-fifths as wide as the head; labrum very short, transversely truncate, with a very small rounded median sinus, at each side of which there is a small and abruptly formed tooth; antennae short, rather slender; gular sutures evenly arcuate, moderately separated, most approximate at the middle; maxillary palpi with the third joint much longer than the second, strongly obconical and compressed; prothorax oblong, the angles distinct; prosternum more developed before the coxae than in the preceding genus; elytra well developed, as long as the prothorax or longer, the basal angles distinct; hind wings probably well developed; abdominal segments not impressed at base; legs slender, the hind tarsi filiform, the joints proportioned nearly as in the preceding; anterior tarsi, rather feebly dilated. Europe.....***Leptobium**

3 — Body very small in size, slender, parallel, convex, polished, distinctly, evenly and more closely punctured, the abdomen relatively finely, very sparsely punctulate; pubescence entirely inconspicuous; head about as wide as the prothorax, somewhat pyriform; labrum as in *Leptobium*, bidentate, the teeth longer and more aciculate; gular sutures well separated, converging to about the middle, thence subparallel to the base; maxillary palpi with the third joint much longer than the second, subcylindric, rapidly narrowed at base, sparsely setulose; antennae short, one-half longer than the head, slender basally, rapidly incrassate distally; neck narrower, three-fifths as wide as the head; prothorax suboval, widest anteriorly, with a narrow median smooth line; prosternum well developed before the coxae; elytra extremely short as in *Dolicaon*, with rounded basal angles, the hind wings undoubtedly obsolete or vestigial; abdominal segments not impressed basally, legs slender, the hind tarsi nearly as in *Leptobium*, the anterior feebly dilated. Europe.....***Scotonomus**

Dolicaon Lap., is founded upon the comparatively gigantic *lathrobioides* Lap., of the regions about Cape Town. Among some 450 species of Coleoptera which I took in that vicinity, there was only this one Paederid, — the largest species of the tribe known to me, — as though the entire paederoid energy of the country had been concentrated in this single species. The diagnosis of *Leptobium* (n. gen.) given above, is taken from the *biguttulum*, of Lacordaire, and that of *Scotonomus* Fauv., from the *raymondi*, of Fauvel. The species, although very few in number, display in *Dolicaon* and *Scotonomus* the greatest disparity in size observable within any of the subtribes of Paederini. In the formation of the very short elytra and probable absence of hind wings, these two genera are identical and wholly different from *Leptobium*, the European species requiring a new generic name, since both

Ophiomorphus and *Adelobium* refer solely to the large South African species forming the type of *Dolicaon*. Dr. Sharp describes from South America (Tr. Ent. Soc. Lond., 1876, p. 247) a small and very aberrant species, under the name *Dolicaon distans*, without however alluding to the structure of the terminal joint of the maxillary palpi, so that I cannot confirm the generic reference. The probabilities are that it is not one of the Dolicaones as here restricted.

Paederi.

In this unusually isolated subtribe the labrum loses a good deal of the value that it has elsewhere, and, although always rather short and broadly truncate, with a small median notch or sinus somewhat as in the Lathrobia, this emargination may be rather wide and shallow, evenly rounded and without flanking teeth as in the European *fuscipes* — judging from a specimen so named for me by Mr. Reitter, — or an abruptly formed semicircle, with a short broad obtuse tooth at each side, as in *femoralis*, or a true triangle with straight sides, with short lobe-like teeth adjoining, as in *riparius*, in all the cases mentioned being entirely devoid of a denticle at the bottom of the emargination. Or, the emargination may be deep, evenly rounded and with a small acute tooth at the bottom, with the apical margin adjoining only broadly and arcuately lobed, as in *littoreus*. Most of these cases refer to *Paederus* proper. In *Paederidus* Rey, probably throughout the genus, the median emargination has a more or less evident triangular tooth at the bottom, this being homologous with the median tooth in the Lithochares.

In general structure, especially in the form of the prosternum, labrum and strongly dilated anterior tarsi, the Paederi display more affinity with the Lathrobia than any other type of Paederini, and the more or less fortuitous tooth at the bottom of the labral emargination, together with the prosternal structure and the dilated anterior tarsi, prove also a relationship with the Lithochares. It is still more evidently related to Lathrobia through *Domene*, — a genus

wholly out of place in the European catalogues, — and the Lithochares connect it with the Medones, although there is evidently a closer relationship between the last two named than between the Paederi and Lithochares, as shown by general habitus. Our species will form three closely allied genera. The four genera represented before me may be distinguished as follows: —

Head large, more or less quadrate and broadly truncate at base; prothorax very broad and strongly rounded at the sides anteriorly, strongly narrowed thence to the base; integuments coarsely and sparsely punctate and pubescent; fourth tarsal joint strongly bilobed; gular sutures distinct, moderately separated and impressed. General in distribution. [= *Paederomorphus* Gaut.] ..... **Paederus**

Head relatively small, strongly narrowed behind the eyes and narrowly truncate or rounded at base, the prothorax relatively much smaller and more evenly oval 2

2 — Punctures and pubescence coarse and sparse, the abdomen always very sparsely punctulate, with the dorsal segments more or less feebly, transversely impressed at base; gular sutures gradually converging and most narrowly — though somewhat widely — separated behind the middle of the post-oral surface, always very feeble and unimpressed and sometimes subobliterated 3

Punctures and pubescence finer and close-set, the abdominal segments strongly, transversely impressed at base; first abdominal segment without basal carina 4

3 — Eyes moderate in size; abdomen obtuse; fourth tarsal joint rather wide and strongly bilobed; head and last two ventrals always black, the elytra invariably dark steel-blue in color. Entire United States ..... **Paederillus**

Eyes large; abdomen gradually narrowed toward tip; fourth tarsal joint very narrowly bilobed; color testaceous nearly throughout. Sonoran regions ..... **Leucopaederus**

4 — Eyes moderate in size; fourth tarsal joint not wider than the preceding, small and slightly bilobed; gular sutures becoming almost completely confluent posteriorly. Europe ..... ***Paederidus**

The beetles of the present group are more highly and conspicuously colored than any others of the tribe, and, being at the same time of moderately large size, especially in the tropics, they have received considerable attention from systematic writers. Excepting the warmer parts of the new world, our representatives are less numerous and less diversified than those of Europe — an exceptional case in the Paederini.

Paederus Grav.

The secondary sexual characters of the male are but slightly diversified, either in this or the other genera of the group, and are very nearly similar throughout, the fifth ventral being virtually unmodified, the sixth having a narrow parallel-sided slit, two to four times as deep as wide. The slit sometimes has its edges beveled throughout as in *grandis*. The elytra of the male are nearly always perceptibly shorter than in the female and the head is sometimes much larger in that sex, but otherwise there is very little sexual difference in the facies. The anterior tarsi are strongly dilated in both sexes and clothed beneath with dense pads of short whitish spongiose pubescence. The various species are confined to the warmer parts of the United States, becoming very numerous in Mexico and are larger, as a rule, and heavier in build than those of *Paederillus*. The four in my cabinet may be known by the following characters: —

Legs black, the femora pale in about basal half. Body large and rather stout, shining, the head and last two ventrals black, the elytra dark blue, prothorax rufous and abdomen flavo-testaceous; antennae black, pale toward base and apex; head in the male large, quadrate, wider than the elytra, with the basal angles very broadly rounded, the eyes only slightly prominent and at about twice their length from the base, smaller in the female, notably narrower than the elytra, with the sides converging and broadly arcuate behind the eyes to the neck; prothorax slightly longer than wide, strongly convex, ovoidal, perceptibly narrower than the head in the male but equal to the latter in the female, polished, with a very few fine impressed and widely scattered nude punctures; elytra very coarsely and deeply but not densely punctate, quadrate, slightly wider than the prothorax and equal to it in length in the male, longer than wide, slightly longer than the prothorax and just visibly wider than the latter in the female; abdomen parallel, slightly narrower than the elytra. Length 9.2–10.5 mm.; width 1.8–1.9 mm. Arizona.....**grandis** Aust.

Legs pale, the femora in rather less than outer half and the tibiae gradually, indefinitely and more nubilously toward base, black. Body otherwise nearly as in *grandis*, the head in the male large, quadrate, parallel at the sides, with the basal angles much less broadly rounded than in *grandis*; eyes nearly similar, the punctures moderately strong, few in number, widely scattered; prothorax only slightly longer than wide, strongly convex, not so greatly narrower than the head as in *grandis*, rounded at the sides anteriorly, scarcely punctured; elytra in

the male much larger, longer than wide, and distinctly longer than the prothorax, equal in width to the latter and but very slightly narrower than the head, similarly punctured. Length 10.0 mm.; width 1.8 mm. Lower California..... **femoralis** Lec.

Legs shorter and relatively stouter, pale honey-yellow throughout, the femora abruptly black in outer third. Body much smaller than in the preceding species, stout and strongly convex, similar in coloration and polished lustre; head in the male a little wider than the prothorax or elytra, the sides converging and circularly arcuate behind the eyes to the neck, similar in the female but subequal in width to the prothorax and narrower than the elytra; eyes at one-half more than their own length from the base; prothorax scarcely longer than wide, oval, rounded at the sides, the latter strongly converging posteriorly as usual; elytra quadrate and scarcely longer than the prothorax in the male, notably longer in the female. Length 6.8 mm.; width 1 25 mm. Europe and Texas..... **riparius** Linn.

Legs nearly as in *riparius* but entirely clear honey-yellow throughout, without trace of darker ornamentation. Body similar to that of *riparius* but still smaller and slightly more slender; head with only very slight sexual differences, distinctly wider than the elytra in the male and only just visibly so in the female; eyes moderately convex and prominent, at about a third more than their own length from the base, the sides behind them strongly converging and circularly arcuate in both sexes; prothorax scarcely visibly longer than wide, obtrapezoidal, the sides broadly arcuate, a little more rounded anteriorly; elytra not quite as long as wide or as long as the prothorax in either sex, coarsely, sparsely punctate, the sides feebly diverging from the base and broadly, feebly arcuate; abdomen subequal in width to the elytra. Length 6.0 mm.; width 1.0 mm. Florida (Crescent City) and Georgia..... **littoreus** Aust.

It is rather remarkable that the European *riparius* should occur within the United States, but two males collected in the Caucasus and forwarded to me by Mr. Reitter, agree in all respects — allowing for sex — with a single female in my cabinet taken at an unrecorded locality in Texas. If it was collected in the neighborhood of Galveston, there is a strong probability of its being simply an adventitious importation, and, that it has established itself in America, is by no means proved. The Mexican *mexicanus* Er., is listed by Henshaw, but I have seen no examples taken within our borders; it has the coloration and facies of *grandis* but is much smaller, with the antennae and legs rufous, the tip of the posterior femora alone black. Our species are all alate and with distinct elytral humeri.

Paederillus n. gen.

This genus is much more boreal in range than *Paederus* and almost entirely replaces the latter in the United States, where it is distributed throughout from the Atlantic to the Pacific. Its species are much smaller as a rule than those of *Paederus*, and of more slender form, with little or no sexual difference in the head; the elytra are, however, frequently distinctly shorter in the male. The species are rather numerous but closely allied among themselves, having a remarkable persistency and uniformity of facies throughout. The coloration of the body is constant, being as stated in the table of genera, and the lustre is always shining, so that these characters will not be mentioned in describing the various forms below. The labrum is short and transversely truncate throughout and completely edentate, with a small abrupt subparabolic median sinus, devoid of medial denticle. The species are usually gregarious and therefore plentiful in individuals when discovered; those represented by material in my cabinet may be described as follows: —

Elytra large, much wider and longer then the prothorax in both sexes... 2
Elytra shorter, never very much longer than the prothorax, even in the female, and occasionally much shorter except in *texanus*..... 3

2 — Body slender, the legs pale throughout, the antennae blackish, pale toward base and slightly paler at the immediate apex; head elongate-oval, the eyes rather small but convex and prominent and at one-half more than their own length from the base; sides behind them rapidly converging, evenly, feebly and circularly rounded throughout to the neck, the angles obtuse and scarcely rounded, the base narrowly truncate; prothorax like the head subimpunctate as usual, elongate-oval, widest only slightly before the middle, narrower than the head; elytra very long, parallel, a third wider and more than a fourth longer than the prothorax in the male and distinctly wider than the head, the punctures only moderately coarse and unusually sparse; abdomen narrower than the elytra, parallel. Male with the fifth ventral very feebly sinuato-truncate at apex, the slit of the sixth narrow, parallel and very deep, the sides straight, the bottom of the slit concealed from view in specimens at hand; female not observed. Length 5.6 mm.; width 0.9 mm. Florida. ..... **floridanus** Aust.

Body slender and nearly similar to the preceding throughout, except that the head is less elongate, the eyes a little larger, the sides behind them only feebly convergent and straight to the basal angles, which are rather

broadly rounded, the base very much more broadly truncate; prothorax elongate-oval, only slightly narrower than the head, widest at two-fifths from the apex; elytra in the female only slightly longer than wide, a fifth wider and longer than the prothorax, slightly wider than the head, parallel, the punctures very coarse and rather close-set; abdomen subequal in width to the elytra, the sixth segment narrowly and feebly impressed along the middle in the female; male unknown. Length 4.9 mm.; width 0.8 mm. North Carolina ..... **carolinae** n. sp.

Body stout; coloration as in the preceding, except that the femora are pale, becoming black in outer third to half, the tibiae and tarsi piceous throughout; head in the male but slightly longer than wide, the eyes rather convex and prominent, moderate in size, the sides behind them strongly convergent, straight for nearly the length of the eyes, then broadly rounding into the truncate base, which is moderably narrow; in the female nearly similar, except that the sides behind the eyes are only feebly convergent and the base more broadly truncate, the basal angles equally rounded in both sexes; prothorax rather stout but elongate-oval, about as wide as the head; widest only slightly before the middle, the sides broadly arcuate; elytra very large, parallel, deeply, moderately coarsely and rather sparsely punctate, convex, very slightly longer than wide and almost similar in the sexes, very much wider than the head and much wider and longer than the prothorax in both sexes; abdomen parallel, slightly narrower than the elytra. Male with the apex of the fifth ventral transversely truncate at apex, the slit of the sixth narrow and very deep, its sides parallel and straight posteriorly, gradually and slightly converging in less than anterior half to the narrowly rounded bottom, the surface distinctly impressed in prolongation of the slit; sixth ventral of the female impressed along the middle as usual. Length 5.3–5.7 mm.; width 1.2 mm. Texas (El Paso), — Mr. G. W. Dunn.

saginatus n. sp.

3 — Legs black or piceous-black, the femora pale in more than basal half..4

Legs pale throughout, never more than shaded slightly with piceous in the region of the knees.....5

4 — Larger species, the elytral punctures much less coarse, moderately slender, the head but little longer than wide, the eyes moderate in size, prominent in the male, less so in the female; sides behind them rather strongly convergent and feebly arcuate in the former, less convergent and more arcuate in the latter, sex; base truncate, the angles distinctly rounded in the female, more narrowly so in the male; antennae rather stout, piceous-black, pale toward base; prothorax but slightly elongate, as wide as the head in the female, relatively a little narrower in the male, broadly arcuate at the sides and widest at apical third; elytra quadrate, less convex than usual, the punctures only moderately coarse and rather close-set, distinctly wider than the prothorax, as long as the latter in the male and a little longer in the female; abdomen parallel, a little narrower than the elytra in both sexes. Male with the fifth ventral transversely truncate at apex, the notch of the sixth elongate-oval in form and only slightly more than twice as deep as wide, rather broadly rounded at the bottom, the adjoining surface of the segment not at all

impressed; sixth ventral in the female almost completely unmodified. Length 6.0–7.0 mm.; width 1.0–1.1 mm. California (Placer Co.).
compotens Lec.

Smaller species and rather more slender, with the elytral punctures normally coarse and deep and rather widely spaced; head small, very much narrower than the elytra in both sexes, the eyes moderate in size and prominence, at about two-thirds more than their own length from the base, the sides moderately converging behind them to the broadly rounded basal angles, without distinct sexual difference, the base rather broadly truncate; antennae nearly as in *compotens;* prothorax rather narrow and elongate-oval, fully as wide as the head in the female and nearly so in the male, widest and broadly arcuate at the sides at apical third; elytra quadrate, without much sexual difference, about as long as the prothorax in both sexes but distinctly wider; abdomen parallel, a little narrower than the elytra. Male with the apex of the fifth ventral feebly sinuate toward the middle, the slit of the sixth narrow, fully three times as deep as wide, with the sides nearly straight and parallel, the bottom rather more narrowly but evenly rounded, the adjoining surface not impressed, the sixth ventral in the female feebly impressed along the middle. Length 5.5–6.7 mm.; width 0.8–0.95 mm. New Mexico, Utah and Wyoming..... **nevadensis** Aust.

5— Elytra much abbreviated, much shorter than wide, with the basal angles very broadly rounded and the sides thence diverging to the apex, the hind wings probably vestigial. Body slender, parallel, convex; head suborbicular, scarcely longer than wide and without perceptible sexual differences, the eyes of the usual size, convex and prominent, the sides behind them rather strongly converging, the basal angles very broadly arcuate and the base somewhat broadly truncate; antennae pale, piceous-black toward the middle; prothorax very slightly narrower than the head, elongate-oval, widest behind apical third; elytra without sexual differences, very much shorter than the prothorax and about equal in width to the latter, coarsely, deeply and moderately sparsely punctured; abdomen subparallel, fully as wide as the elytra. Male with the apex of the fifth ventral transversely truncate, the slit of the sixth narrow and about three times as deep as wide, with its sides parallel and nearly straight, ogivally rounding toward the bottom, the latter rather narrowly rounded and narrowly beveled, the adjoining surface apparantly not impressed; sixth ventral of the female narrowly and very feebly impressed on the median line. Length 4.4–4.9 mm.; width 0.75–0.8 mm. Iowa..... **palustris** Aust.

Elytra subquadrate and parallel or very nearly so, with the basal angles less broadly rounded, the hind wings developed..... 6

6— Elytral punctures much less coarse and deep than usual and very sparse. Body slender, subparallel, colored throughout as in the preceding, the head subsimilar in the sexes, rather small, distinctly narrower than the elytra, elongate-suboval, the eyes convex but rather small, at nearly twice their own length from the base, the sides distinctly converging behind them and broadly, feebly arcuate to the obtuse basal angles very near the neck, the angles moderately broadly rounded; prothorax elongate-oval, distinctly narrower than the head in both sexes, widest

at about two-fifths from the apex, the sides very broadly arcuate even anteriorly; elytra quadrate, much wider but barely as long as the prothorax in the male, much longer than wide, a fourth wider and very slightly longer than the prothorax in the female, the sides subparallel, very feebly arcuate, the punctures becoming subobsolete toward tip; abdomen parallel, a little narrower than the elytra in the male, equal in width to the latter in the female. Male with the apex of the fifth ventral feebly sinuato-truncate, the slit of the sixth narrow, parallel and deep, the sixth ventral of the female feebly impressed along the middle. Length 4.5-5.0 mm.; width 0.78–0.88 mm. New York (along the ocean beaches).....**obliteratus** Lec.

Elytral punctures coarse, deep and moderately close-set throughout 7

7 — Slit of the sixth ventral in the male rounded at the bottom, the adjoining surface of the segment not very distinctly impressed..... 8

Slit of the sixth segment acutely angulate at the bottom in its external edge, the internal edge narrowly rounded, the edge between the angle and arcuation beveled; knees generally dusky.....11

8 — Elytra larger, distinctly wider and longer than the prothorax in both sexes. Body stouter, somewhat as in *saginatus*, the head relatively small, very much narrower than the elytra, not longer than wide, suborbicular, the eyes rather large but not very prominent, at a third more than their own length from the base, the sides behind them moderately converging and straight for a short distance, then very broadly rounded to the rather broadly arcuato-truncate base; prothorax slightly elongate, stout, fully as wide as the head, widest at about apical two-fifths, the sides very broadly rounded and only feebly converging toward base, the latter unusually broad; elytra quadrate, convex, parallel, a third wider and nearly a fourth longer than the prothorax; abdomen parallel, distinctly narrower than the elytra. Male with the apex of the fifth ventral scarcely at all modified, the slit of the sixth subparallel and straight at the sides, narrow and fully three times as deep as wide, the edges finely and strongly beaded throughout, the bottom narrowly, parabolically rounded, the adjoining surface of the segment scarcely at all impressed; female not known. Length 5.3 mm.; width 1.0 mm. Texas (exact locality not recorded).....**texanus** n. sp.

Elytra relatively smaller and especially narrower, subequal in length to the prothorax.....9

9— Elytra with the basal angles only slightly exposed at base; head obtrapezoidal behind the eyes in the male; body slender. Head distinctly elongate, the eyes small, at nearly twice their own length from the base, very convex and prominent, the sides behind them rather strongly convergent and straight for the length of the eyes, then moderately rounding to the neck, the base moderately wide; antennae rufo-testaceous, dusky for some distance near the middle; prothorax rather narrow, much elongated and narrower than the head, widest before the middle, the sides broadly arcuate; elytra narrow and slightly elongate, parallel, the sides broadly, feebly arcuate, only very slightly wider than the prothorax and a little shorter than the latter, equal in width to the head; punctures less coarse and distinct than in the two following species; abdomen parallel, as wide as the elytra. Male with the fifth ventral

unmodified, the slit of the sixth very narrow and deep, nearly four times as deep as wide, its sides straight and parallel, the bottom evenly and circularly rounded, the edges finely beaded; female unknown. Length 4.8 mm.; width 0.8 mm. Iowa.....**iowensis** n. sp.

Elytra with the basal angles widely exposed at base; body stouter, the head almost semicircularly rounded behind the eyes and slightly narrower than the elytra 10

10—Body subparallel; head very slightly longer than wide, the eyes rather well developed but only moderately prominent, at about one-half more than their own length from the base, the portion behind them semicircularly rounded from eye to eye, with feeble truncation at the neck; prothorax slightly elongate and a little narrower than the head; widest at about a third from the apex, the sides broadly arcuate; base four-fifths of the maximum width; elytra quadrate, parallel, scarcely longer than wide, equal in length to the prothorax and a fifth wider; abdomen parallel, distinctly narrower than the elytra. Male with the slit of the sixth ventral only moderately narrow, scarcely three times as deep as wide, with its sides straight and parallel but arcuately converging in anterior two-fifths, the bottom evenly, parabolically rounded; edges finely beaded throughout; sixth ventral in the female strongly impressed along the middle. Length 4.2–5.6 mm.; width 0.78–1.0 mm. New York, Virginia, North Carolina and Iowa.....**littorarius** Grav.

Body, head and eyes throughout nearly as in *littorarius*, the sides of the head behind the eyes more unevenly arcuate, becoming straighter near the eyes; prothorax narrower, smaller and relatively more elongate, much narrower than the head, the sides strongly, evenly arcuate, the base narrower, three-fourths of the maximum width, the latter at fully two-fifths from the apex; elytra slightly longer than wide, parallel, a fourth wider than the prothorax and evidently a little longer; abdomen as wide as the elytra. Male with the slit of the sixth ventral about three times as deep as wide, having the form of a very narrow deep parabola, its sides becoming almost parallel behind, the edges finely beaded and the surface of the segment adjoining anteriorly slightly flattened; female unknown. Length 5.2 mm.; width 0.9 mm. Washington State.

pugetensis n. sp.

11—Form slender, nearly parallel, the head rather narrow and elongate, the eyes moderate in size, at about two-thirds more than their own length from the base and only moderately prominent, the sides behind them distinctly convergent to the neck, at first nearly straight, then rather broadly rounded through the basal angles, the base moderately broadly truncate, the head similar throughout in the sexes; prothorax distinctly elongate-oval, a little narrower than the head, widest before the middle, with the sides broadly arcuate; elytra slightly wider than the head, the sides subparallel, the apex rather distinctly and angularly emarginate, not quite as long as wide and scarcely as long as the prothorax in the male, quadrate and equal in length to the latter in the female; abdomen as wide as the elytra. Male with the slit of the sixth ventral fully three times as deep as wide, parallel, its sides nearly straight but gradually and parabolically converging anteriorly, the edges finely and strongly beaded, the bead bounded externally by a fine

strong canaliculation throughout; female with the sixth ventral strongly and narrowly impressed along the middle posteriorly. Length 4.5-5.9 mm.; width 0.75–0.8 mm. Rhode Island (Boston Neck) and New York (Long Island)..... **canonicus** n. sp.

The descriptions have been taken from the male unless the contrary is expressed or evident. *Texanus*, which is probably from the eastern or central parts of the state, resembles the El Paso *saginatus* considerably, but, besides the coloration of the legs, it differs in having the eyes larger and much less prominent and the part of the head behind them shorter, with less converging sides and much more broadly rounded basal angles, with certain other differences, the comparisons being made from the male. *Canonicus* may be distinguished from *littorarius* by its slightly more slender form and distinctly smaller and shorter elytra.

Leucopaederus n. gen.

This genus differs from *Paederus* and *Paederillus* in a number of characters, no one of which would perhaps be sufficient to qualify it, but which, in their summation, seem to be amply sufficient to demonstrate its generic isolation. When color alone, for example, is so constant a feature as we know it to be in *Paederillus*, this alone becomes an important and very significant distinction, but when this is supplemented by the much larger eyes, relatively small head and prothorax, with the abdomen more gradually acuminate at apex and the much larger elytra, together with the rather different form of the prothorax, there can be but little doubt of the propriety or necessity of the course here suggested. The labrum in *Leucopaederus* is truncate and wholly edentate at apex, with a small and abruptly formed, parabolically rounded and completely edentate emargination at the middle, the surface adjoining the sinus being feebly swollen. We have at present but a single species as follows: —

Form stout, moderately convex, polished, pale rufo-testaceous throughout the body and legs, the elytra more brownish in tinge and the extreme apex of the abdomen black; antennae piceous, gradually paler toward base; head small, but little longer than wide, the eyes large, prominent,

at their own length from the base, the sides behind them strongly convergent and evenly, circularly rounded to the neck, the base rather narrowly truncate; prothorax slightly narrower than the head, somewhat elongate, the sides rounded anteriorly, becoming thence parallel and straight in the male, or feebly convergent and slightly arcuate in the female, to the rounded basal angles; elytra large, quadrate in the male or very slightly longer than wide in the female, a half to three-fourths wider and two-fifths longer than the prothorax, parallel, with the sides nearly straight, the basal angles very broadly exposed at base and only narrowly rounded, the punctures only moderately coarse and unusually sparse; abdomen much narrower than the elytra in the male but nearly as wide as the latter in the female. Male with the fifth ventral unmodified, the slit of the sixth not more than twice as deep as wide, with its sides parallel and nearly straight posteriorly, becoming oval anteriorly, the edges finely beaded and the surface throughout beyond the bead narrowly and feebly impressed; sixth ventral of the female broadly and very feebly impressed along the middle. Length 4.0–5.1 mm.; width 0.9–1.0 mm. California (Yuma) and Arizona (East Bridge). **ustus** Lec.

I found this species in enormous numbers in hoof prints partially filled with decomposing vegetable matter, in the sands of the river bank on the Indian reservation opposite Yuma, Arizona. A few species of *Leucopaederus* occur also in Mexico, one of which has been described by Dr. Sharp.

Lathrobia.

The distinguishing characters of this, the largest subtribe of the Paederini, are the abbreviated prosternal intercoxal piece, and the strongly dilated anterior tarsi, which it possesses in common with the Dolicaones and Paederi, and the conical and generally pointed or aciculate fourth joint of the maxillary palpi, by which it differs from both of those subtribes. Otherwise there is great variety in structure and facies, from the impunctate and polished *Dacnochilus*, to the densely and confluently sculptured *Domene*, and, in size, from the larger forms of *Glyptomerus* and *Eulathrobium* to the diminutive *Lathrolepta*. The eyes are present and generally moderately developed, except in *Glyptomerus*, where the normally faceted eye is replaced by a small whitish area in which the chitinous integument is evidently very thin, undoubtedly conveying a general impression of light to the cephalic ganglia and homologous with the smaller whitish

sensitive spot in *Scotonomus*, of the Dolicaones. The widely dilated anterior tarsi are densely clothed beneath with large whitish pads, composed of peculiar flattened and multinucleated submembranous hairs. The gular sutures are invariably separated but vary in form and direction, affording good generic characters. The ~~nineteen~~ genera described below from material in my cabinet are divisible into at least four distinct groups represented by *Lathrobium*, *Lathrotaxis*, *Domene* and *Dacnochilus*, and are about equally diffused through the old and new continents:—

twenty-six

Labrum broadly rounded, edentate, having a broad and gradually formed angulate emargination, the angle at the bottom usually with a minute denticle as in some Paederi; integuments densely sculptured and subopaque anteriorly. Body rather slender, parallel and unusually convex, moderately large in size, the head well developed, oval, subcircularly rounded at base, the eyes moderately small, anterior; labrum short and transverse; maxillary palpi moderately long and thick, the third joint obconic, the fourth narrow, conical and acute; gular sutures arcuately converging for a short distance, then becoming straight, parallel and approximate to the base; antennae moderately long, thick, the joints rounded in outline toward base; neck about a third as wide as the head; prosternum moderately long before the coxae, carinate posteriorly; prothorax elongate-oval, the angles obliterated, the head and pronotum densely, confluently sculptured; elytra short, small, as wide as the prothorax and shorter, apparently subconnate, the sides broadly rounding to the base, the basal angles obliterated and the hind wings probably vestigial, the sculpture coarsely, confusedly punctured and shining; abdomen minutely, densely punctulate; legs rather long and slender, the hind tarsi slender, filiform, nearly as in *Linolathra*, the two basal joints each notably elongate, equal and slightly shorter than the fifth. Europe.....***Domene**

Labrum bilobed and edentate; integuments more or less strongly and sparsely punctate..... 2

Labrum broadly rounded, dentate or edentate, having an abruptly formed deep angulate emargination at the middle; integuments subglabrous, subimpunctate and highly polished.....23

2 — Elytra without a lateral fold..... 3

Elytra with a longitudinal fold on the deflexed flanks parallel with the side margin.....16

3 — The normal faceted eye wholly obsolete; species large, parallel; head large, broadly arcuato-truncate at base, the labrum broadly lobed, the lobes narrowly rounded laterally, the broad median angulation not attaining the base; maxillary palpi long and slender, the fourth joint evenly, conically pointed; gular sutures broadly, feebly arcuate, widely separated anteriorly but gradually convergent to the base, at and before which they became virtually confluent; eye-spots obliquely fusi-

form; antennae long and slender, the narrowed bases or pedicels of the joints strongly compressed; neck two-fifths as wide as the head; prosternum feebly carinate almost to the apex; legs thick, the hind tarsi long and very slender, with the basal joint extremely short, the last joint much the longest; claws long and slender; integuments shining, sparsely and not very coarsely punctate, the punctures of the elytra confused and not seriate; anterior angles of the prothorax rounded and obliterated, the elytra generally shorter than the prothorax. Europe ..... ***Glyptomerus**

The eyes normal and distinctly faceted..... 4

4 — Body normally convex, the fourth joint of the maxillary palpi small and acute; antennae moderate in length, with the joints not or only very feebly compressed at base..... 5

Body strongly depressed; maxillary palpi slender, the fourth joint much larger than usual, conical, with the apex truncate; eyes small; antennae long and rather stout, the joints compressed at base.....15

5 — Neck broad, seldom evidently less than half as wide as the head and generally more than half..... 6

Neck narrow, about a third as wide as the head.....13

6 — Hind tarsi longer and more slender, the basal joint much shorter than the second, the fifth very much shorter than the first four combined.. 7

Hind tarsi shorter and stouter, the first and second joints subequal, the first four differing but little among themselves and together frequently but little longer than the fifth.....10

7 — Elytra very short, from one-half to two-thirds as long as the prothorax, with the basal angles obsolete; hind wings wanting or vestigial; abdomen more strongly, never densely punctate. Body moderately large in size, parallel and rather stout, the labrum short, broadly and angularly emarginate throughout its width at apex; maxillary palpi rather long, not inflated, the fourth joint narrowly aciculate; eyes moderately small; gular sutures rather widely separated, parallel; antennae moderate in length, very stout but with the joints obconical, the basal joint robust; prosternum moderately developed before the coxae; prothorax well developed, with the apical angles more or less distinct, the head broadly truncate at base, the angles rounded; neck wide, distinctly more than half as wide as the head. America..... **Apteralium**

Elytra varying in length from decidedly longer to distinctly shorter than the prothorax, always having the basal angles distinct and probably never connate, the hind wings present; abdomen always very minutely punctate..... 8

8 — Eyes very small, the head large, much wider than the elytra, truncate at the neck which is less than half as wide, the angles very broadly rounded; labrum very nearly as in the preceding genus, the maxillary palpi moderately long, with the third joint rather inflated distally and pedunculate basally, the fourth slender and aciculate: gular sutures strongly impressed, straight, moderately widely separated anteriorly, gradually converging to the base where they are most approximate and rather narrowly separated; antennae well developed and moderately thick, the joints obconical; prosternum rather long before the coxae; legs somewhat slender; posterior tarsi filiform, with the basal joint relatively larger than in *Lathrobium*. Eastern America.... **Abletobium**

Eyes normally developed; neck never less and frequently more than half as wide as the head; prosternum short and broad before the coxae; labrum short, rectilinearly truncate at apex, with a rounded median sinus, the lobes broad and feebly oblique at their apical margin; antennae variable, stout to rather slender; head broadly arcuato-truncate at base.. 9

9 — Body parallel, more or less stout, the gular sutures nearly straight, feebly converging from apex to base, near which they are most approximate, sometimes widely separated and parallel; head well developed but never wider than the elytra; prothorax oblong, with the anterior angles more or less distinct; elytra generally shorter in the male than in the female; body large to moderate in size, the sculpture rather coarse and sparse, except that of the abdomen which is minutely punctate. Cosmopolitan..... **Lathrobium**

Body slender and fusiform, moderate in size, sculptured nearly as in *Lathrobium*; gular sutures parallel, arcuate, generally widely separated and most approximate at or slightly before the middle of the post-oral surface; head small; prothorax oblong, with the apical angles moderately distinct; elytra larger than in *Lathrobium*. America.. **Litolathra**

10 — Gular sutures rather widely separated, parallel and straight to the base. Body slender, normally convex, the head well developed but not as wide as the elytra, broadly arcuato-truncate at base, with broadly rounded angles, the neck a little less than half as wide, the eyes rather small but unusually convex and prominent; labrum obliquely bilobed, the lobes rather narrowly rounded at tip; maxillary palpi rather short but nearly as in *Lathrobium*, the third joint obconic; antennae moderately thin, the joints elongate, subcylindric, rather rapidly narrowed at base; prosternum rather long in front of the coxae; prothorax oblong-elongate, with the angles distinct, the elytra oblong, parallel, with prominent basal angles and feebly subserial punctures, longer and wider than the prothorax; abdomen parallel, the sides straight, the sculpture very fine and dense; legs short, moderately stout; body small in size. Europe. ***Throbalium**

Gular sutures parallel and arcuate, rather widely separated, most approximate at or near the middle of the post-oral surface; labrum broadly, obliquely bilobed, the apex broadly and subangularly emarginate throughout the width 11

Gular sutures very widely separated, most approximate anteriorly, thence gradually diverging to the base where they are most remote; labrum narrowly, deeply and angularly cleft in the middle, the lobes each subquadrate in form with its apex obliquely truncate..... 12

11 — Body parallel, moderately slender and decidedly depressed, small in size, the head subquadrate, rectilinearly truncate at base throughout the width, the angles right and not evidently rounded; eyes moderately developed, slightly prominent; maxillary palpi short, the third joint inflated toward tip; antennae rather long, moderately stout, the joints obconic; neck wide, three-fifths as wide as the head; prosternum short before the coxae; prothorax short and broad, with the apical angles well defined, the polished median line being defined by series of punctures; elytra oblong, longer and wider than the prothorax, with well-

defined basal angles, punctured in regular series; legs moderately short, decidedly slender; abdomen minutely sculptured. America.

Lathrobiopsis

Body parallel, normally convex, slender, shining, rather small in size, sculptured as in *Lathrobium;* head well developed, parallel or gradually wider toward base, the latter broadly arcuato-truncate, the angles rounded; eyes rather small to moderate in size; maxillary palpi moderately long and not very stout or decidedly inflated; antennae generally very stout and submoniliform, the basal joint thick; neck generally a little more than half as wide as the head; prosternum somewhat longer before the coxae than in *Lathrobium;* prothorax suboblong-elongate, with the apical angles moderately distinct; elytra longer or shorter than the prothorax, the punctures frequently arranged in uneven series; abdomen parallel, with the sides straight; legs thick and rather short. America..... **Lathrobioma**

12 — Body slender, parallel, moderately convex, very small in size, coarsely and sparsely sculptured, the head broadly truncate at base, with narrowly rounded angles, the eyes small and anterior; maxillary palpi short, the third joint inflated; antennae moderately long but stout and submoniliform; neck half as wide as the head; prosternum rather long in front of the coxae, the prothorax oblong-elongate, with the sides rounded at apex; elytra shorter than the prothorax, with the punctures rather confused in arrangement; legs moderate in length and thickness; abdomen parallel. America..... **Lathrolepta**

13 — Posterior tarsi larger and more elongate, with the first joint distinctly shorter than the second. Body larger, broader and more fusiform, with the head relatively small, rounded at base, the eyes more or less well developed, the antennae long, slender, filiform, not incrassate distally, the labrum short, truncate, with a small and broadly angular median emargination, the lobes usually broadly, feebly oblique posteriorly and inwardly; gular sutures widely separated, distinct; prosternum moderately developed before the coxae; neck one-third as wide as the head; abdomen minutely, densely punctate and dull; elytral punctures irregular, never serial..... 14

Posterior tarsi smaller, more slender and filiform, the first joint distinctly longer than the second, the fifth about as long as the first two combined. Body smaller, extremely slender, linear and subparallel, the head relatively larger, oblong-elongate, arcuately truncate at base, with the angles rounded, the eyes rather well developed; labrum short, truncate, much narrowed at base, with the usual small median emargination, the lobes narrowly rounded externally; maxillary palpi shorter, somewhat strongly inflated, the fourth joint strongly retractile; gular sutures moderately separated, feebly arcuate, slightly diverging toward base, effaced throughout and traceable only by the arrangement of the punctures; antennae moderately thick, distinctly incrassate distally; prosternum much elongated before the coxae; prothorax much elongated, with the angles rounded; elytral punctures disposed in coarse impressed regular lines; anterior tarsi less strongly dilated; neck rather more than a third as wide as the head; legs rather short and slender. Europe..... ***Pseudobium**

14 — Gular sutures nearly straight, feebly converging posteriorly throughout and most approximate at or near the base of the head; maxillary palpi unusually elongate and slender, the fourth joint very slender and aciculate. Europe and America..... **Tetartopeus**

Gular sutures arcuate, most approximate at or before the middle of the head, gradually diverging thence to the base; maxillary palpi rather less elongate and stouter; head nearly similar; species small in size. America ..... **Deratopeus**

15 — Parallel, the neck wide, rather more than half as wide as the head, the latter transversely truncate at base, the labrum deeply and broadly cleft to the base, the lobes long, moderately diverging, parallel, slightly everted and evenly rounded at tip; fourth palpal joint evenly conical, not compressed; gular sutures widely separated, parallel, becoming feebly convergent toward base, where they are most approximate; antennae half as long as the body; prothorax short and broad, with the apical angles distinct, the prosterum short before the coxae as in *Lathrobium;* elytra a little wider and longer than the prothorax, with the punctures subserial in arrangement; legs rather short and stout, the hind tarsi moderately long and slender, with the first, third and fourth joints subequal, the second a little longer, the fifth as long as the preceding four combined; claws unusually long and strong. Europe.....***Achenium**

Parallel and rather broad, nearly as in *Achenium,* the head, prothorax and elytra proportioned almost similarly; labrum very short, the emargination extending throughout the width, the sides not lobiform; gular sutures parallel and broadly arcuate, not very widely separated and most approximate at the middle; fourth palpal joint compressed; neck fully three-fifths as wide as the head; elytral punctures confused, not at all serial in arrangement; legs rather long, moderately stout, the hind tarsi long, slender, with the basal joint much elongated, subequal in length to the next two combined and longer than the fifth. Europe ..... ***Scimbalium**

16 — Gular sutures less separated, converging posteriorly, becoming most approximate at or near the base of the head; basal joint of the hind tarsi distinctly shorter than at the second.....17

Gular sutures parallel, broadly arcuate to nearly straight, most approximate at or near the middle of the post-oral surface or at least distinctly before the base.....18

Gular sutures generally more widely separated, most approximate anteriorly, gradually more or less divergent posteriorly, becoming most distant at the base.....19

17 — Body large, stout, parallel, the head arcuato-truncate at base, with very broadly rounded obsolete angles, the neck but little more than a third as wide; lobes of the labrum obliquely subquadrate; prothorax oblong-suboval, the anterior angles rounded; abdominal segments feebly impressed at base; legs and tarsi thick. Easteru America. **Eulathrobium**

Body rather large, more slender and convex, parallel, the head circularly rounded or feebly subtruncate behind, the neck about two-fifths as wide; lobes of the labrum evenly rounded throughout their contour;

prothorax elongate-oval, the angles obliterated; abdominal segments strongly, transversely impressed at base; legs and tarsi rather slender. Pacific coast of America..... **Lathrotropis**

18 — Body somewhat small in size, more or less slender and less convex, parallel, the head oval or subquadrate, with the basal angles more or less rounded; eyes rather small in size, anterior; labrum short, the lobes widely divergent, more narrowly rounded laterally; maxillary palpi slender and elongate, not inflated; antennae more or less slender and elongate, the joints obconical; neck always noticeably less than half as wide as the head; prosternum rather long before the coxae, frequently feebly carinate throughout the length; prothorax more or less narrow and elongate-oval, with the anterior angles broadly rounded or obliterated, the punctures generally dense and confused, with the median impunctate line frequently subelevated; elytra frequently longer and wider than the prothorax, the punctures generally feebly sublineate; legs rather long and slender; tarsi as in the preceding genera. Europe and America..... **Lobrathium**

Body larger in size and less punctate; posterior tarsi rather shorter but more or less slender, the first joint subequal to the second and each longer than either the third or fourth, the fifth subequal in length to the first two together; body moderately large in size, rather broad, moderately convex, the head generally distinctly narrower than the elytra, broadly arcuato-truncate at base, the angles rather distinct and more or less narrowly rounded; eyes well developed; labrum with a large triangular notch, the lobes obliquely subquadrate, each subrectilinear at apex; maxillary palpi more or less elongate, not inflated, the fourth joint conical and acutely pointed; neck broad, more than half as wide as the head; antennae rather long and slender as a rule, filiform; prosternum short before the coxae; prothorax more or less oblong or obtrapezoidal, moderately elongate, with the anterior angles distinct; elytra larger than the prothorax, with the punctures generally sparse and always lineate in arrangement; legs rather long and slender. America... **Lathrotaxis**

19 — First and second joints of the hind tarsi equal or with the first a little longer than the second 20

First joint of the hind tarsi much shorter than the second..... 22

20 — Hind tarsi shorter, the four basal joints short and subequal, the fifth moderate; anterior tarsi feely dilated. Body very small, slender, rather depressed, the head small, broadly arcuato-truncate at base, the labral lobes thick, subquadrate, with rounded angles; eyes rather small; maxillary palpi short and stout, the third joint somewhat inflated; gular sutures very widely separated and strongly divergent, being separated at base by about a third the width of the head; antennae rather long and thick, the joints obconic; neck half as wide at the head; prosternum short; prothorax short, oblong, the angles acutely defined, the median impunctate area defined by impressed lines; elytra well developed as a rule, longer and wider than the prothorax; abdomen generally opaque and very densely punctulate. Eastern America.

Pseudolathra

Hind tarsi long, the two basal joints more elongate..... 21

21 — Hind tarsi stout toward base, the fifth joint much elongated, the an-

terior strongly dilated. Body moderately small, rather stout, notably convex, the head moderately small, arcuato-truncate at base, the eyes well developed, the labral lobes somewhat large, subcircularly rounded; maxillary palpi rather long and thick but not inflated; gular sutures rather widely separated but almost parallel, very feebly diverging from near the apex to the base; antennae very long, slender and filiform; neck half as wide as the head; prosternum moderately short, the prothorax broad and short, oblong, the angles moderately defined; elytra moderate, slightly larger than the prothorax, the punctures lineate; abdomen broad, densely dull; legs rather slender, Western America. **Paralathra**

Hind tarsi very slender, filiform, the two basal joints relatively much elongated, the first frequently a little longer than the second. Body small, slender, subparallel and convex, the head rather well developed though always narrower than the elytra, the eyes moderately large, the labrum short, very broadly emarginate throughout the width, the lobes broadly, obliquely truncate, narrowly rounded externally; gular sutures moderately distant, very feebly diverging posteriorly and genetally obliterated, being traceable only by the punctuation; maxillary palpi rather long and stout; antennae moderate in length and generally rather thick, the joints obconic; neck distinctly less than half as wide as the head; prothorax rather small, oblong, with the angles distinct; elytra variable but always much wider than the prothorax and never shorter, the sculpture always very sparse and lineate; abdomen slender, the punctures not very dense. America, except the Pacific coast fauna. **Linolathra**

22 — Body more or less fusiform, moderately small in size and of the usual convexity; head small, arcuato-truncate at base, the eyes generally well developed, the labral lobes wide, subcircularly rounded anteriorly; gular sutures widely separated, more or less rapidly diverging from near the apex to the base; palpi more or less short and thick; neck half as wide as the head; antennae moderately long, rather thick, the joints obconic; prothorax moderately large, oblong, the angles generally rather distinct; elytra always well developed, longer and wider than the prothorax, the punctuation linear; abdomen rather broad, minutely, very densely punctate and densely dull as a rule; legs moderately long and slender. America..... **Lathrobiella**

Body parallel and rather convex, nearly as in *Lathrobioma*, small in size, the head well developed, as wide as the elytra, broadly arcuato-truncate at base, the eyes small in size; labrum short, broadly emarginate throughout the width, the lobes rather narrowly rounded externally; palpi moderately long and thick; gular sutures widely separated, arcuate, distinctly diverging from near the apex to the base, where they are separated by a fourth or fifth of the total width; antennae moderate in length, very thick, with the joints but little longer than wide; neck half as wide as the head; prothorax rather elongate, suboblong, with the angles distinct; elytra small, shorter than the prothorax, the basal angles as usual and not rounded; abdomen not densely punctulate, the segments not at all impressed at base; legs moderate in length, somewhat slender. Eastern America..... **Microlathra**

23 — Form slender, parallel, moderately convex, the tactile setae at the sides of the body small and feebly developed; head moderate, not quite as wide as the elytra, broadly arcuato-truncate at base, with the angles not rounded; front normal; eyes well developed; maxillary palpi moderately long, the third joint slightly inflated, the fourth acute and slender toward apex; gular sutures widely separated; most approximate anteriorly, before the middle strongly arcuate, diverging widely to the base; antennae rather slender but very gradually and distinctly incrassate, the joints obconic; labrum edentate; neck barely two-fifths as wide as the head; prosternum short before the coxae; prothorax short, obtrapezoidal, with the angles distinct; elytra but little longer or wider than the prothorax, with a few fine punctures arranged serially; abdomen parallel, finely, sparsely sculptured; legs rather long, slender; posterior tarsi slender, filiform, the first joint elongate, the first four decreasing in length, the fifth about as long as the first. Subtropical America..... **Dacnochilus**

Form very stout and short, broadly convex, the lateral tactile setae long and conspicuous; head very short, much wider than long, trapezoidal; eyes moderate or rather small; frontal margin somewhat advancing far above the base of the labrum, broadly rounded; labrum bidentate; maxillary palpi rather small and slender, the third joint but very feebly inflated; gular sutures as in *Dacnochilus*, widely separated, strongly arcuate, most approximate a little before the middle, thence more widely diverging to the base than to the apex; antennae rather short, slender and subfiliform; neck relatively slender, not more than a third as wide as the head; prothorax short and transverse, the angles distinct; elytra short and transverse but longer than the prothorax, impunctate; abdomen short and broad, very densely punctulate and dull, gradually narrowed posteriorly; legs relatively short and slender, the tarsi nearly as in *Dacnochilus* but shorter. Tropical and subtropical North and South America. ..... **Acalophaena**

Of the genera described in the above table not occurring within the geographical limits of this study, attention might be directed to the superficial similarity between *Glyptomerus* Müll (= *Typhlobium* Kr.), *Domene* Fauv., and the American *Apteralium*, they all having short, in some cases possibly subconnate, elytra and vestigial or wholly aborted wings, judging from their external facies. *Throbalium* Rey, has the usual habitus, but the very small *Pseudobium* Rey, is of peculiar appearance, being unusually slender, with the coarse punctures of the elytra arranged in regular lines which are rather strongly impressed, more so than in any American genus; there is also a notable extension of the prosternum before the coxae. The two genera *Achenium* Curtis, and *Scimbalium* Er., are evidently related by their general characters,

although differing so radically in the structure of the labrum and hind tarsi. Their very depressed form seems to be correlated in some way with the very long antennae, and the entire facies bespeaks a habitat under the bark of trees. It is interesting to note, in this connection, the very long antennae pertaining to many other very depressed subcortical beetles — notably *Laemophloeus*, a condition brought about undoubtedly from necessities of this special environment. It is rather singular that the true affinities of *Domene* should have been overlooked by the European observers, excepting Rey, the peculiar dense sculpture having probably suggested a relationship with the Stilici, for it is evidently very close to *Lathrobium*. The genus *Dacnochilus*, although differing rather radically in the labrum and form of the prothorax, is really closely allied to *Linolathra*, as shown by the hind tarsi, gular sutures, sculpture and general facies. *Acalophaena* is a still more specialized form, of remarkably broad and compact build, with long bristling tactile setae at the sides of the body.

Apteralium n. gen.

As before remarked, this genus reminds us considerably of *Glyptomerus* and *Domene* in its very short elytra with obsolete humeral angles. The hind wings are wanting and represented by very minute vestigial fillets that are wholly inconspicuous; the elytra are however not connate. *Apteralium* differs from *Glyptomerus*, not only in the rather distinct and not obsolete anterior angles of the prothorax, but in the presence of well developed normal eyes and in the much shorter antennae, also in the relatively much less minute basal joint of the hind tarsi and more widely separated parallel gular sutures. We have two very distinctly characterized species as follows: —

Body moderately stout, dark piceo-rufous to piceous-black in color throughout, the legs and antennae rufous; head well developed, slightly wider than the elytra but only just visibly wider than the prothorax in the male, equal to the latter in the female, parallel and nearly straight at the sides, the basal angles moderately rounded; gular sutures straight; punctures coarse and very sparse, rather closer toward the sides; eyes at fully three times their own length from the base; pro-

thorax about a fifth longer than wide, a little shorter in the female, the sides distinctly converging from the slightly obtuse apical angles to the base and nearly straight, the punctures coarse, very sparse and irregularly disposed, the broad median smooth area not defined by series; elytra slightly narrower than the prothorax and half as long in the male, equal to the latter in width and three-fifths as long in the female; the sides slightly diverging posteriorly from the humeri, which are not very broadly rounded; punctures smaller than those of the prothorax and less sparse, disposed in very uneven series, sometimes irregular; abdomen parallel, equal in width to the elytra in both sexes, shining, the punctures fine and not dense. Male with ventrals two to four narrowly and very feebly impressed along the middle, the fifth having a broader deep parallel impression bounded by tumid sides and not attaining the base, the apical margin with a feeble shallow rounded sinus, the impression narrowly shining and glabrous along the median line; sixth ventral broadly, feebly lobed at tip, the lobe with a small shallow rounded sinus at its middle, the surface tumid apically and impressed basally at the middle, the lateral slopes of the tumidity more densely clothed with black pubescence; female with the sixth ventral strongly lobed at apex, the lobe evenly rounded. Length 8.0.–9.6 mm.; width 1.1 mm. Iowa and Missouri.....**brevipenne** Lec.

Body shorter and much stouter, black in color throughout, the legs and antennae dark rufous; head shorter and broader in form, large, much wider than the elytra in both sexes, the eyes nearly similar, the sides behind them shorter, parallel and arcuate, the basal angles very broadly rounded; antennae stout and filiform; gular sutures feebly arcuate, the punctures coarse and less sparse; prothorax slightly longer than wide, slightly narrower than the head, only slightly narrowed from the apical angles, which are broadly rounded, to the basal angles which are also notably rounded, the punctures coarse but much more close-set, the median smooth line much narrower; elytra about three-fifths as long as the prothorax in both sexes and distinctly narrower, the sides more strongly diverging from the more broadly rounded basal angles and very feebly arcuate; punctures strong and sparse and irregularly disposed; abdomen shining, parallel, as wide as the elytra, finely and not very closely punctate. Male with ventrals two to four wholly unmodified, the fifth very feebly impressed along the middle from apex to base, gradually more narrowly to the base, the bottom not glabrous along the median line and the sides not tumid, the apex feebly sinuate along the impression in about median third; sixth segment almost unmodified, having a rather narrow and very feeble parallel impression along the middle throughout, the apex very broadly, feebly arcuate, the middle third becoming gradually very feebly sinuato-truncate; female with the sixth ventral moderately lobed at tip, the lobe rather narrowly rounded. Length 8.0 mm.; width 1.28 mm. North Carolina (Highlands).....**carolinae** n. sp.

The second species differs very greatly from *brevipenne* in in its shorter and broader form, more broadly rounded angles

of the head, prothorax and elytra, radically in the sexual characters, and, to an unexpected degree, in the form of the gular sutures.

Abletobium n. gen.

This genus is founded upon a rather small species, having some characters which ally it rather closely with *Apteralium*. The short elytra are flat and appear to be very closely joined along the suture, as though it also might be apterous, but the basal angles are more distinctly defined, although slightly rounded. In its large head it also reminds us of the preceding genus and the very small eyes are perhaps suggestive of *Glyptomerus*. The type and only known species may be described as follows from the male: —

Form parallel, moderately convex, the elytra depressed, uniform pale testaceous in color throughout the body, legs and antennae and shining in lustre; head large, very much wider than the prothorax or elytra, the sides behind the very small anterior eyes parallel and broadly, evenly arcuate, the basal angles very broadly rounded, the base becoming transverse along the neck; antennae rather long, though somewhat shorter than the head and prothorax, thick and filiform, the joints obconic, the basal joint moderately stout; prothorax rather narrow and distinctly elongate, the sides feebly but evidently converging from the distinct, though evenly rounded, apical angles to the similarly rounded basal angles and straight, the punctures similar to those of the head, rather small but distinct, moderately sparse and irregularly disposed, the smooth median line not defined by series; elytra as long as wide, distinctly shorter and wider than the prothorax, the sides evidently diverging from the very narrowely rounded basal angles and straight the punctures not very fine but feeble, sparse and confusedly arranged; abdomen parallel, fully as wide as the elytra, rather shining, the punctures very fine, somewhat close-set but not dense; dorsal segments not transversely impressed at base; legs rather long and slender. Male with simple secondary sexual characters, the surface of the fifth and sixth segments wholly unmodified, the apex of the sixth with a large rounded sinus in median half, the sinus about four times as wide as deep. Length 5.8 mm.; width 0.85 mm. Massachusetts, — Mr. F. Blanchard ..... **pallescens** n. sp. (Fvl. MS.)

I do not have the female before me at present, but it probably does not differ materially in general form. The pale color of the type may be partially due to immaturity.

Lathrobium Grav.

The general aspect of the numerous species of *Lathrobium*, when compared with the related genera below, is stout, compactly built and large or moderately large in size. There is marked uniformity in these respects, giving the species a habitus which enables us to generically identify them at once; but in many characters, even those of the gular sutures and antennae, there is notable variety. The contrast between the extremely thick antennae of *armatum* and related species, and the long slender filiform antennae of *gravidulum*, for example, is very remarkable, and, in the related genus *Litolathra*, the antennae are still longer and more slender. The gular sutures vary notably, from approximate and distinctly converging posteriorly, to widely separated and parallel; they are always straight or very nearly so however. The elytra are sometimes distinctly wider and longer than the prothorax in both sexes, but are frequently much shorter than the prothorax, in which case the wings are probably more or less curtailed or aborted. In the *armatum* group, and, in all probability to a greater or less degree throughout the genus, there is very little difference in form of the body or relative size of the elytra in the two sexes, but, as far as noted, the female is a little smaller and narrower than the male, in opposition to a somewhat general rule. The species are very abundant but have never been carefully worked out, even in the European fauna, and have never been thoroughly collected in America. They are especially abundant in the northern Atlantic districts and appear to be somewhat local in habitat.* Those species represented by material in my cabinet may be described as follows: —

* Of those Lathrobia not having a pleural fold on the elytra, I have collected 11 species in less than two weeks of August, on a small area of about 100 acres in Rhode Island, and, from Mr. F. Blanchard, have received 19 species taken in the immediate vicinity of Lowell, Mass. Only 6 species are common to these series, owing perhaps to the decidedly warmer climate of the southern New England coast, but enough can be inferred from this to prove that we hardly yet begin to know the species.

Antennae extremely stout, attenuated toward tip, the middle joints never longer than wide, rounded at the sides and strongly constricted at base; body generally larger and stouter, the legs rather stout..... 2

Antennae stout, with the joints not distinctly longer than wide, but obconic in form, the legs moderately stout..... 9

Antennae stout to moderately slender, generally rather shorter than the head and prothorax, the joints distinctly elongate and obconic; legs relatively rather slender to stout in form.....14

2 — Elytra bicolored, black basally and red apically..... 3

Elytra unicolorous, black 6

3 — Elytra distinctly longer and wider than the prothorax in both sexes, black, shining, the elytra bright rufous, becoming black in basal two-fifths; legs dark rufous, the antennae piceo-testaceous; head distinctly wider than the prothorax in both sexes, nearly as wide as the elytra in the male, evidently narrower in the female; eyes at between two and three times their length from the base, the angles well rounded; width a little before the angles slightly greater than at the eyes; neck three-fifths as wide as the head; gular sutures rather narrowly separated, feebly converging to the base; prothorax about a fourth longer than wide, the angles all obviously rounded; the sides very feebly converging and nearly straight; punctures like those of the head, rather coarse, deep, irregular in arrangement and moderately sparse, broadly sparse toward the middle of the head, the median smooth thoracic line not defined by punctured series; elytra large, parallel, slightly longer than wide, the punctures coarse, deep, moderately sparse and arranged in very irregular series; abdomen parallel, slightly narrower than the elytra, finely and only moderately closely punctulate; legs moderately stout. Male with the fourth and fifth ventrals narrowly and very feebly impressed along the median line, the sixth also similarly impressed along the middle toward base but very narrowly swollen toward apex, the latter rectilinearly truncate, with a very small median sinus wider than deep, the edges of which are callous and polished; surface of the sixth segment more finely and sparsely punctulate and pubescent, except the lateral slopes of the apical tumidity, which are clothed with stiff black hairs; sixth segment of the female rather narrowly lobed at tip. Length 10.0 mm.; width 1.5 mm. New York (Hudson Valley).....**amplipenne**

Elytra equal or subequal in length to the prothorax..... 4

Elytra distinctly shorter than the prothorax..... 5

4 — Elytral punctures rather small, feebler and sparser and arranged in rather well defined series; body stout, parallel, shining, black, the elytra, — gradually and nubilously toward apex — and the legs throughout, rufous; antennae rufo-piceous; head large, only very slightly wider near the base than at the eyes, the latter moderate; angles not very broadly rounded; neck three-fifths as wide as the head, the punctures moderately coarse, deep and sparse toward the sides, very remotely scattered elsewhere; prothorax unusually large, scarcely visibly narrower than the head, about a fifth longer than wide, the sides very feebly converging posteriorly throughout and nearly straight, the angles narrowly rounded at apex, broadly at base; punctures coarse but not very deep,

impressed and sparse; elytra fully as long as the prothorax, at base equal in width to the latter but a little narrower than the head, the sides sensibly diverging from the basal angles to the apex and nearly straight, slightly longer than wide, the punctures impressed; abdomen broad, parallel, as wide as the elytra, minutely and not very closely punctulate; legs moderately long and stout. Male unknown, the sixth ventral of the female broadly and obtusely lobed at apex. Length (contracted) 7.8 mm.; width 1.4 mm. New Jersey..**subaequale** n. sp.

Elytral punctures closer, more distinct and not so obviously seriate; form less stout, similar in coloration, the elytra gradually becoming rufous in apical third; head much smaller, with the basal angles more broadly rounded, equal in width to the prothorax and slightly narrower than the elytra, the sides more nearly parallel, similarly punctate; prothorax smaller but otherwise nearly similar, the punctures rather stronger and less sparse; elytra smaller, subparallel or only slightly broader behind, not quite as long as the prothorax and distinctly wider throughout, about as long as wide; abdomen as wide as the elytra, finely and moderately densely punctulate; legs nearly similar. Male with the fourth and fifth ventrals wholly unmodified, the sixth with a very narrow and feeble impression along the median line, extending to about apical third, the surface thence unmodified to the rectilinearly truncate apex, except a very small feeble narrow tumidity at the margin, the edge not distinctly modified. Length 10.0 mm.; width 1.3 mm. Illinois, New York and Ontario.....**procerum** n. sp.

5 — Form less stout than in the preceding species, rather strongly convex and almost exactly parallel, polished, piceous-black in color, the elytra rufous, becoming black near the base; legs rufous, the antennae piceous; head large, quite distinctly wider than the elytra, slightly broader near the base, the basal angles only moderately rounded; punctures sparse but deep toward the sides, very remote elsewhere; prothorax distinctly narrower than the head, a fourth longer than wide, slightly narrowed posteriorly throughout, the angles rounded, the punctures sparse, coarse and deep; elytra small, quadrate, subparallel, equal in width to the prothorax and much shorter, very coarsely, only moderately sparsely and irregularly punctate; abdomen parallel, not quite as wide as the elytral apex, minutely and not very closely punctulate; legs stout. Male unknown; female with the sixth ventral obtusely produced and roundly lobed at apex. Length 8.5 mm.; width 1.1 mm. New Jersey, — Prof. J. B. Smith.....**praelongum** n. sp.

6 — Elytra more or less obviously longer and wider than the prothorax in both sexes..... 7

Elytra equal in length to the prothorax or a little shorter; legs rufous throughout..... 8

7 — Large species, the legs rufous in color, shining, the antennae rufopiceous; punctures of the head and pronotum coarse, deep and moderately sparse, of the elytra sensibly smaller but equally sparse, tending to serial arrangement, of the abdomen very fine and rather dense; head not quite as wide as the elytra, broader behind than at the eyes, the angles only moderately broadly rounded; gular sutures approximate, converging basally; prothorax oblong, only very slightly narrower than

the head, not more than a sixth longer than wide, the sides not distinctly converging and very feebly arcuate, the angles rounded as usual; elytra large, rather longer than wide, somewhat longer and wider than the prothorax, parallel; abdomen parallel, slightly narrower than the elytra; legs rather long and only moderately stout. Male with the fifth ventral entirely unmodified, the sixth narrowly and very feebly impressed in the middle in nearly basal two-thirds, thence longitudinally and obtusely tumid along the median line to the apex, which is truncate, with a very minute, simple and shallow median sinus, five or six times as wide as deep; female slightly more slender than the male. Length 9.5 mm.; width 1.5 mm. New York (Hudson Valley).....**deceptivum** n. sp.

Smaller species, the legs and antennae dark piceo-rufous, the surface shining, the head and pronotum coarsely deeply and moderately sparsely punctate, the punctures sparser toward the middle of the head, with the smooth line of the pronotum as usual, those of the elytra slightly smaller and rather sparser, not very definitely lineate, of the abdomen minute and very close-set; head well developed, a little wider than the elytra in the male, subequal to the latter in the female, wider near the base than at the eyes, the angles moderately rounded; gular sutures less approximate; prothorax rather small, distinctly longer than wide and much narrower than the head, the angles somewhat distinct, the sides feebly converging and nearly straight; elytra nearly a fourth longer than wide, much wider and longer than the prothorax, parallel and nearly straight at the sides; abdomen somewhat narrower than the elytra, parallel. Male with the fifth ventral scarcely visibly flattened along the median line, the sixth rather widely but very feebly impressed throughout in continuation, the apex with a very broad shallow sinus in almost median half and fully four times as wide as deep, the bottom of the sinus transverse and with two very feeble rounded lobes, having an intermediate minute and very feeble sinus; female with the sixth ventral very broadly, obtusely lobed at apex. Length 7.0 mm.; width 1.15 mm. Massachusetts, — Mr. F. Blanchard — and Michigan (Detroit).....**spissicorne** n. sp.

8 — Form very stout, parallel, the elytra scarcely as long as wide; legs rather short and very stout; head large, equal in width to the elytra and very slightly wider than the prothorax, formed as usual, the coarse punctures very remote except toward the sides; prothorax as usual, large, only slightly longer than wide, the punctures coarse, deep and sparse, the sides feebly converging; elytra a little shorter and slightly wider than the prothorax, coarsely and rather confusedly punctate; abdomen very broad, as wide as the elytra, parallel, finely, rather densely punctulate. Male with the fifth ventral wholly unmodified, the sixth with a narrow and very feeble impression on the median line in more than basal half, the surface very broadly and just visibly swollen thence to the rectilinearly truncate and wholly unmodified apex, the pubescence a little denser at each side of the swelling; female slightly narrower than the male, with the sixth segment feebly and broadly lobed at tip. Length 9.0 mm.; width 1.5 mm. Massachusetts,— Mr. F. Blanchard, New York (Long Island) and New Jersey (Orange).....**nigrolucens** n. sp.

Form narrower and more elongate, the elytra fully as long as the prothorax,

slightly longer than wide and with the sides diverging feebly from the basal angles throughout; legs stout; integuments coarsely and sparsely punctate anteriorly, the punctures of the elytra smaller, irregularly disposed, of the abdomen very fine and moderately close-set; head in the male as wide as the base of the elytra but narrower than the apex, formed as usual but with the sides more rounded toward base; prothorax subequal in width to the head and base of the elytra, distinctly longer than wide, feebly narrowed from apex to base; abdomen as wide as the elytra, parallel. Male with the fifth ventral wholly unmodified, the sixth narrowly flattened along the median line toward base, the surface feebly and narrowly prominent in the middle at apex, the latter rectilinearly truncate and unmodified throughout; female with the sixth segment feebly lobed at tip. Length 9.8 mm.; width 1.4 mm. Illinois..... .....**armatum** Say

9 — Head large, as wide as the elytra or wider; gular sutures moderately separated, straight and parallel; elytra bicolored, red, black toward base 10

Head small, narrower than the elytra, with more broadly rounded basal angles; elytra uniform in color throughout and concolorous..... 11

10 — Form rather stout, parallel, normally convex, shining, black, the elytra and legs bright rufous, the former black in rather less than basal half toward the suture and less toward the sides; antennae obscure rufous; head large, slightly wider near the base than at the eyes, the latter moderate, the sides nearly straight with the angles moderately rounded; punctures coarse, rather close-set toward the sides, almost wanting on the vertex; prothorax a fourth longer than wide, much narrower than the head, feebly narrowed posteriorly throughout, the sides nearly straight, the angles rather well rounded; punctures coarse, moderately sparse, confused, the smooth median line not defined by punctured series; elytra more depressed, slightly elongate, about as long as the prothorax and slightly wider, the sides nearly straight and feebly diverging from base to apex, the punctures less coarse than those of the prothorax, rather sparse and confused; abdomen parallel, not quite as wide as the elytral apex, the punctures minute and close-set. Male wanting; female with the apex of the sixth ventral very broadly rounded and briefly lobed. Length 7.0 mm.; width 1.1 mm. British Columbia ....**divisum** Lec.

Form nearly similar but more slender, the coloration, lustre and sculpture similar, except that the punctures throughout are somewhat sparser; head not so large, the sides parallel and nearly straight for almost twice the length of the eyes behind the latter, the angles right and moderately rounded as usual; antennae rufous, not as long as the head and prothorax, thick, filiform, the median joints very slightly longer than wide; prothorax nearly as in *divisum* but only slightly narrower than the head, very feebly narrowed from apex to base; elytra slightly wider than the prothorax, equal in length to the latter in the female, a very little shorter in the male, slightly longer than wide, the sides feebly diverging from the base; abdomen as in *divisum*. Male with the fifth and sixth ventrals unimpressed, the latter broadly arcuato-truncate at apex, the surface at the apex with two small approximate tufts of short

stiff black setae; female very nearly similar to the male, except the slightly longer elytra with more diverging sides, the sixth ventral evenly rounded and rather broadly lobed at tip. Length 6.5 mm.; width 0.9 mm. California (Mendocino and Sta. Cruz Cos.)..**franciscanum** n. sp.

11 — Gular sutures moderately separated and strongly converging posteriorly to the base. Body elongate and rather slender, more depressed than in the preceding species, parallel, dark and uniform piceous in color throughout, the legs and antennae rufous; surface shining; punctuation coarse, deep and sparse anteriorly, the smooth line of the pronotum sometimes subobliterated anteriorly and with its surface more or less uneven toward base; head suboval, fully as long as wide, the sides parallel and feebly arcuate, the angles broadly rounded to the neck; prothorax slightly elongate, a little wider than the head, parallel, the sides feebly arcuate, the angles rather distinct; elytra small and depressed, not quite as long as wide, distinctly shorter than the prothorax, somewhat wider than the latter at base and distinctly so at apex, the diverging sides nearly straight, the basal angles distinct, the punctures not very coarse, very sparse and confused; abdomen parallel, as wide as the elytral apex, the punctures minute and rather dense. Male unknown; female with the sixth ventral narrowly and strongly lobed at tip, the lobe narrowly rounded, the surface feebly and narrowly impressed along the middle. Length 7.5 mm.; width 1.1 mm. New Hampshire. **picescens** n. sp.

Gular sutures widely separated, straight and parallel to the base..... 12

12 — Elytra very much shorter than the prothorax, with the straight sides strongly diverging from base to apex and the surface rather depressed. Body elongate, only moderately stout, shining, black throughout, the legs and antennae rufous; punctures coarse and sparse anteriorly, those of the elytra notably fine, very sparse and confused, of the abdomen minute and dense; head longer than wide, the sides parallel and nearly straight for a long distance, the basal angles only moderately broadly rounded; prothorax wider than the head, distinctly elongate, parallel, the sides broadly, feebly arcuate, the angles rather distinct, the broad median smooth area even, generally slightly impressed along the median line toward base; elytra at base as wide as the prothorax or slightly wider, at apex very distinctly wider, about as long as wide, strongly and angularly emarginate at tip; abdomen parallel, scarcely as wide as the elytral apex. Male unknown; female with the sixth ventral strongly and rather narrowly lobed at tip, the apex of the lobe rather broadly rounded, the surface feebly impressed or flattened in the middle toward tip. Length 7.8 mm.; width 1.0 mm. Wisconsin (Bayfield), Montana (Kalispell), and Idaho (Coeur d'Alène),— Mr. Wickham..... .....**longiventre** n. sp.

Elytra not so greatly abbreviated and rather less strongly emarginate at apex, with the sides subparallel and the surface less depressed.....13

13 — Body rather stout, subparallel, deep black throughout, the legs and antennae dark piceo-rufous; punctures of the head and pronotum deep and distinct, sparse but only moderately coarse, of the elytra fine, sparse and confused, of the abdomen minute and close-set as in *longiventre;* head slightly elongate, the sides parallel and straight for only half the

distance to the base, then broadly rounded to the neck; prothorax slightly elongate, wider than the head, the sides parallel and scarcely arcuate; elytra scarcely as long as wide, distinctly wider than the prothorax at base and apex; abdomen as wide as the elytra. Male unknown; female with the sixth ventral strongly and rather narrowly lobed at tip, the lobe evenly and strongly rounded at apex, with its surface rather strongly convex and not at all impressed. Length 7.0 mm.; width 1.1 mm. British Columbia.....**vancouveri** n. sp.

Body smaller, parallel, moderately stout, shining, piceous-black in color, the legs and antennae pale rufous, sculptured nearly as in *vancouveri*, the punctures anteriorly fully as small and still sparser, those of the abdomen even denser; head notably elongate and oval, the sides parallel and broadly arcuate, rounding more strongly at base to the neck; prothorax distinctly wider than the head, oblong, parallel, slightly elongate; elytra distinctly longer than wide, a little wider than the prothorax throughout and only very slightly shorter; abdomen parallel, as wide as the elytra. Male unknown; female with the sixth ventral nearly as in *vancouveri*. Length 5.7 mm.; width 0.9 mm. Illinois.

illini n. sp.

14 — Species of the *simile* type, parallel or subparallel, rather large in size, the antennae moderate in length and frequently stout, the elytral punctures more or less fine, sparse and inconspicuous, the male ventral characters conspicuous, the fifth and sixth segments more or less strongly impressed, the latter also with a large distinct apical emargination.....15

Species of the *simplex* type, parallel, the antennae but little less stout and rather more elongate than in the preceding, rather large; ventral characters of the male inconspicuous, consisting of a very minute nick at the middle of the apex of the truncate sixth segment and generally a very fine linear impression of the disk; elytral punctures generally coarse, strong and conspicuous, the legs relatively more slender than usual..20

15 — Elytra as long as the prothorax.....16

Elytra always shorter than the prothorax in both sexes.....17

16 — Form stout, black, the elytra slightly piceous, the legs and antennae dusky testaceous, shining; head small, the sides parallel and straight or very feebly arcuate for a long distance behind the eyes, the angles broadly rounded; punctures not very coarse and extremely sparse, a little less so at the sides; antennae thick, the medial joints strongly obconic and less than one-half longer than wide; neck a little more than half as wide as the head; gular sutures widely separated, almost straight and parallel; prothorax large, but little longer than wide, distinctly wider than the head and correspondingly narrower than the elytra, gradually feebly narrowed behind from apex to base; punctures sparse, very much coarser than those of the head; elytra exactly quadrate, parallel, equal in length to the prothorax, finely, sparsely and inconspicuously punctate; abdomen not quite as wide as the elytra, minutely and very densely punctulate, dull in lustre. Male unknown; female with the sixth ventral very broadly, obtusely lobed at apex, the surface strongly convex, wholly unimpressed. Length 7.0 mm.; width 1.2 mm. Massachusetts, — Mr. Blanchard — and Canada.

obtusum n. sp. (Fvl. MS.)

Form very stout, shining, black throughout, the legs and antennae dull rufous; head and elytra rather finely, very sparsely punctate, the pronotum hardly more coarsely and also very sparsely, the abdomen minutely and densely punctulate; head small, longer than wide, the sides parallel and feebly arcuate, the angles broadly rounded; antennae thick, the strongly obconic medial joints one-half longer than wide; gular sutures moderately separated and feebly converging to the base; prothorax broad, much wider than the head, slightly longer than wide, the sides very nearly parallel, the angles rather rounded; elytra large, distinctly wider and a little longer than the prothorax, slightly longer than wide, subparallel, the sides feebly arcuate, the surface rather broadly impressed at each side of the suture; abdomen not quite as wide as the elytra. Male with a distinct parallel impression in about middle sixth of the fifth ventral, the sixth with a narrower, deeper and more anteriorly attenuated impression, the apex having a triangular emargination about as deep as wide, occupying the posterior part of the impression, the edges of the notch thin, pale and membranous at the bottom; female unknown. Length 7.3 mm.; width 1.4 mm. Manitoba (Winnipeg) ..... **sparsellum** n. sp.

17 — Elytra not wider than the prothorax and very much shorter, the form of the body more elongate and parallel..... 18

Elytra slightly wider than the prothorax and only a little shorter; body stouter and less parallel..... 19

18 — Elytra depressed, scarcely as long as wide, with the sides diverging from the base; body black, shining; punctures of the head and elytra rather small, sparse, those of the pronotum much coarser, only moderately sparse, of the abdomen minute and very dense, the surface dull in lustre; head moderate in size, the eyes at nearly three times their own length from the base; angles broadly rounded, the sides parallel and more or less arcuate; antennae stout, with the strongly obconic joints one-half longer than wide; prothorax large, a little wider than the head, oblong, with the sides parallel and very slightly arcuate; elytra small, barely as long as wide, depressed, the sides nearly straight and very feebly diverging from the base; abdomen fully as wide as the base of the elytra. Male with the fifth ventral impressed in less than median third, the impression wider than long, rounded anteriorly, not quite attaining the base, the apex with a rounded shallow sinus bounding the impression; sixth ventral with a narrower longitudinal impression, the apex with a large, evenly rounded sinus, slightly wider than deep and equal in width to the impression, the edges of the sinus narrowly glabrous at the bottom, the impression clothed with short, very stout spiculiform hairs. Length 8.0 mm.; width 1.1 mm. New Hampshire (White Mts.) ..... **washingtoni** n. sp.

Elytra normally convex, parallel, exactly quadrate; body polished, black throughout, the legs bright, and the antennae dusky, rufous; head moderate, the sides feebly arcuate, the angles broadly rounded; antennae stout as in *washingtoni;* prothorax large, slightly wider than the head, only slightly elongate, somewhat narrowed from apex to base, the punctures much coarser than those of the head and elytra, which are rather small, sparse; elytra equal in width to the prothorax and

distinctly shorter; abdomen not quite as wide as the elytra. Male with the third and fourth ventrals narrowly and very feebly impressed along the middle, the fifth more broadly and deeply so, the impression attenuate anteriorly and not attaining the base, the apex with a shallow, circularly rounded sinus in median third; sixth ventral narrowly and deeply impressed along the median line except near the base, the apical margin with a large and very deep angulate notch, the bottom of which is filled with a broad whitish submembranous area having a transverse or feebly sinuate posterior outline; impressions more coarsely pubescent or spiculose. Length 8.8 mm.; width 1.15 mm. Rhode Island (Boston Neck).....**rigidum** n. sp.

19 — Male with ventrals three to six impressed, the sixth with a narrow and deep emargination. Body parallel, shining, black or slightly piceous, the elytra gradually rufescent posteriorly; legs and antennae as in the preceding species; head parallel and broadly arcuate at the sides, the latter merging gradually into the broadly rounded basal angles, the punctures fine but deep and very sparse; strongly obconic medial joints of the antennae but little more than one-half longer than wide; prothorax broad, but slightly elongate, a little wider than the head, subparallel, the sides becoming straight in the middle; punctures very sparse and only moderately coarse; elytra fully as long as wide, parallel and feebly arcuate at the sides, slightly wider and shorter than the prothorax, the punctures like those of the head, fine and very sparse; abdomen nearly as wide as the elytra. Male with the impression of the third and fourth ventrals narrow and feeble, of the fifth wider, deeper and elongate-oval, the apex feebly, broadly sinuate in the middle, the sixth with a large deep triangular emargination about as deep as wide, with its edges glabrous anteriorly, the impressions spiculose as usual; female with the sixth ventral rather small, feebly lobed at tip. Length 8.5 mm ; width 1.2 mm. Rhode Island (Boston Neck).

postremum n. sp.

Male with ventrals three and four wholly unmodified; five and six impressed, the sixth with a very broad sinus much wider than deep. Body parallel, stouter in form than *postremum*, polished, black, the elytra gradually rufo-piceous posteriorly as a rule; head subquadrate, the sides parallel and feebly arcuate, the angles rather broadly rounded, the punctures fine and very sparse; antennae stout, the strongly obconical joints one-half longer than wide; prothorax large, oblong, distinctly wider than the head, but little longer than wide, very feebly narrowed posteriorly from the rounded apical angles, the punctures coarse and very sparse; elytra subquadrate, parallel, slightly shorter and wider than the prothorax, normally convex, rather finely, very sparsely and confusedly punctate; abdomen as wide as the elytra, minutely and densely punctulate. Male with the fifth ventral narrowly and deeply impressed along the middle except near the base, the apex broadly, feebly sinuate toward the middle; sixth with a broader, deep, more anteriorly narrowed impression throughout, the apex with a broad and rather shallow sinus, three or four times as wide as deep, its bottom broadly, very obtusely angulate, the sinus fully half as wide as the segment; female with the sixth ventral obtusely lobed at tip,

unimpressed. Length 7.5–9.0 mm.; width 1.15–1.25 mm. Massachusetts (Lowell), Rhode Island (Boston Neck — a slightly larger and more vigorous variety), New York (near the city) and New Jersey.

simile Lec.

20 — Sinus at the tip of the sixth ventral in the male larger, about a fifth as wide as the segmental apex.....21

Sinus extremely minute.....22

21 — Body larger and stouter, parallel, black and polished throughout, the legs and antennae rufo-piceous; head rather well developed, the sides parallel for half the distance behind the eyes, then broadly rounded to the neck, becoming almost transverse just before attaining the latter, the punctures rather coarse and sparse; antennae longer than in the *simile* group, the obconic joints almost twice as long as wide; prothorax oblong, parallel, only slightly elongate and but little wider than the head, the angles well rounded, the punctures coarse, rather sparse and confused; elytra slightly wider than the prothorax and distinctly shorter, barely as long as wide, with the sides very feebly diverging from base to apex in the male, subequal in length to the prothorax, fully as long as wide and more parallel in the female, the punctures coarse, uneven and sparse; abdomen as wide as the elytra, minutely and relatively sparsely punctulate, polished. Male with the fifth ventral unmodified, the sixth rectilinearly truncate at tip, with the evenly rounded sinus wider than deep and a fifth as wide as the apex, the surface not obviously impressed along the middle; female with the sixth ventral broadly, obtusely rounded at tip. Length (extended) 8.0 mm.; width 1.15 mm. Rhode Island (Boston Neck).

neglectum n. sp.

Body smaller and less stout, parallel, shining, black throughout, the legs and antennae dusky testaceous; head as in *neglectum*, but more narrowly ovoidal, the sides more gradually approaching the neck and not becoming transverse, the punctures less coarse and still sparser and the antennae somewhat shorter, the medial joints obviously less than twice as long as wide; prothorax smaller, narrower and just visibly wider than the head, the sides slightly converging from the less broadly rounded anterior angles to the basal angles, the punctures equally coarse and sparse; elytra obviously wider than the prothorax, subparallel, a little longer than wide and about as long as the prothorax in both sexes, the punctures coarse, uneven and only moderately sparse; abdomen broad, fully as wide as the elytra, minutely and not very closely punctulate. Male with the fifth ventral unmodified, the sixth rectilinearly truncate at apex, with a rounded sinus, wider than deep and about a fifth as wide as the apex, the surface narrowly and distinctly impressed along the median line from before the middle to the apical sinus; female as in *neglectum*. Length (contracted) 6.5 mm.; width 1.0 mm. Michigan (Marquette).....**innocens** n. sp.

22 — Form relatively larger and more elongate, parallel, black and shining throughout, the elytra sometimes piceous, the legs and antennae dusky rufous; head and antennae nearly as in *innocens* but larger; prothorax broad, only very slightly elongate, very much wider than the head, the sides distinctly converging posteriorly from the arcuation at apical

third or fourth, the punctures notably coarse, confused and moderately sparse, the median smooth line even; elytra in the male short, barely as long as wide, not wider than the prothorax at base and only slightly wider at apex, the sides diverging noticeably; in the female much larger, fully as long as wide, nearly as long as the prothorax and much wider, slightly wider at apex than at base, the prothorax relatively narrower in that sex; punctures notably coarse, uneven and moderately sparse; abdomen not quite as wide as the elytra, minutely and not very closely punctulate. Male with the sixth ventral very narrowly, linearly and distinctly impressed along the middle in posterior two-thirds, the apex rectilinearly truncate, with the median sinus very small, rounded, wider than deep as usual and only about a ninth or tenth as wide as the apex. Length 7.5 mm.; width 1.1 mm. Lake Superior,— LeConte; Wisconsin (Bayfield), — Mr. Wickham. [= *fauveli* Duviv.].....**simplex** Lec.

Form relatively stouter, polished, black throughout, the legs and antennae dusky testaceous; head as in *simplex* but relatively larger, the punctures coarse, rather close-set toward the sides, very sparse medially, the antennae rather longer than in any of the other species of this group, the medial joints in the male being scarcely less than twice as long as wide, a little shorter in the female; prothorax oblong, scarcely narrowed posteriorly, distinctly longer than wide and subequal in width to the head in both sexes, coarsely, sparsely punctured; elytra similar in the sexes, parallel, distinctly longer than wide, much wider than the prothorax and equal in length to the latter, the punctures moderately coarse and rather feeble, sparse; abdomen broad, fully as wide as the elytra, the fine punctures less sparse than usual in this group. Male with the sixth ventral distinctly, linearly impressed along the median line in apical two-thirds, the apex as in *simplex*, the median sinus still more minute and only about a twelfth as wide as the apex. Length (contracted) 6.5 mm.; width 1.15 mm. Massachusetts (Lowell),— Mr. F. Blanchard.....**gravidulum** n. sp.

The under surface of the first joint of the hind tarsi, in many of the Lathrobia having this joint very short, and especially in *Lathrobium* and its immediate allies, is obliquely prolonged beneath the second, slightly expanded and has a flattened sole, as though to aid in the use of the tarsus. This sole does not exist on any of the other joints, leading to the presumption that, in motion, this short basal joint may be the only one in contact with the ground, the remainder of the tarsus being elevated or resting on the tips of the claws.

The species of the *armatum* group, having peculiarly thick and submoniliform antennae, slightly attenuated at the tip, are difficult to discriminate, and it is possible that a few of the forms here announced may have less than full specific value. Of *amplipenne* I have a good series of about a dozen

specimens, in which the coloration of the elytra is perfectly constant, except in one individual, where the red is replaced by a piceous-black; as the other specimens are constant, this dark coloration may be accidental.

There is no group of species known to me, showing more plainly the subgeneric value of types of male secondary sexual characters, than these components of *Lathrobium*, for we have successions of what are without doubt distinct, though closely related, species, having throughout the same type of sexual modifications, which types are abruptly limited in extent and without intermediates, as shown by the above table.

The name *simplex* was replaced by *fauveli* by M. Duvivier, (Cat. 1883) on the ground of preoccupation, but I am by no means certain that the older *simplex* is really a *Lathrobium*, and therefore have not made the change of name.

There are four described species of *Lathrobium* which are not before me at present; these are appended below with short descriptions which I drew up some years ago from the original unique types. They are all very distinct species and will undoubtedly have to be removed from the restricted genus *Lathrobium*, but having failed to record any observations upon the elytral flanks, gular sutures or structure of the hind tarsi, I am unable to dispose of them among the other genera at present, and indeed some of them are so isolated as to indicate new genera. For the present however they may be attached to *Lathrobium*:—

Form moderately slender, parallel, head gradually and slightly narrowed behind the eyes to the neck, which is broad, the surface coarsely and remotely punctate; antennae not very thick, as long as the head and prothorax, the latter about as long as wide, equal in width to the head, the punctures coarse, sparse and rather feebly impressed; elytra about as long and wide as the prothorax, the punctures very coarse, not close-set and rather feebly impressed, arranged in series throughout; abdomen finely and sparsely punctulate. Male having a feeble, transversely oval medial impression on the fourth ventral — possibly accidental, — the fifth very minutely, feebly sinuate and extremely feebly impressed at apex, the sixth with a broad angular emargination, occupying the entire apex and at least five times as wide as deep. Length 5.7 mm.; width 0.9 mm. North Carolina.....**seriatum** Lec.

Form subparallel and rather stout, convex, dark rufo-testaceous, the head blackish; elytra rufous, with a large median blackish cloud extending

from the base, where it is nearly as wide as the elytra, to the apex, where it has gradually become narrower; head parallel, very coarsely and remotely punctate; prothorax as long as wide, equal in width to the head, the punctures rather large, sparse and irregularly disposed, except single series along the median smooth line; elytra just visibly wider than the prothorax and distinctly longer, nearly as long as wide, the punctures not fine, rather sparse and partially arranged in series almost throughout; abdomen finely and sparsely punctulate. Male unknown. Length 6.4 mm.; width 1.1 mm. Florida.....**parcum** Lec.

Form rather stout, parallel; head large, wider than prothorax, parallel, not very coarsely but deeply, rather closely punctate, the antennae thick, submoniliform, almost as long as the head and prothorax, the latter about a fifth longer than wide, distinctly narrower and a little shorter than the elytra, the sides feebly convergent and nearly straight from apex to base, the punctures small, feeble, rather close-set and irregularly arranged throughout, with a wide median impunctate line; elytra somewhat longer than wide, the punctures fine, feeble, sparse and confused; abdomen very finely, rather densely punctulate; legs pale. Male with the fifth and sixth ventrals wholly unmodified on the disk, the apex of former very broadly, angularly emarginate, the latter somewhat more deeply and angularly emarginate, both throughout the entire width, the latter emargination apparently about six times as wide as deep. Length 8.0 mm.; width 1.25 mm. Louisiana.....**pedale** Lec.

Form slender but convex; sides of the head slightly converging behind the eyes, the basal angles broadly rounded, the punctures very fine, feeble and remotely scattered; antennae slender, distinctly longer than the head and prothorax, the latter wider than the head, just visibly longer than wide, convex, parallel, finely, very feebly, indistinctly, sparsely and irregularly punctate; elytra not wider than the prothorax and distinctly shorter, quadrate, feebly, sparsely and irregularly punctate; abdomen darker in color, finely and extremely densely punctulate, dull in lustre. Male having a rounded discal impression in apical half of the fifth ventral, the apical margin not modified, the sixth segment with a small acutely cuspidiform emargination at tip, the surface not modified. Length 4.5 mm.; width 0.7 mm. Michigan....**bicolor** Lec.

The narrowing of the head behind the eyes in *seriatum*, the peculiar coloration of *parcum* and the sexual characters of *pedale* and *bicolor*, make any definite generic assignment of these species impossible in the absence of the types; it is hoped, however, that enough characters are given to allow of identification in case they should be rediscovered. *Bicolor* is a preoccupied name in *Lobrathium*, but the sculpture of the body is very unlike that prevailing in Rey's genus, where the punctures are especially coarse and close-set throughout in all the species known to me; so the name should stand.

Litolathra n. gen.

This genus, while closely allied to *Lathrobium*, differs in the arcuate form of the gular sutures, which are always widely separated and more remotely so at base than at the middle of the post-oral part of the head. The species are moderately numerous and are much smaller in average size than those of *Lathrobium;* they also have a type of male secondary sexual characters — uniform throughout — differing from anything known in that genus. In addition, the antennae are longer, thinner and more filiform, and the abdomen is rather more tapering toward tip and always very densely punctulate and dull, — characters which also distinguish them from *Lathrobium*. The general build of the body in species of the *concolor* type, suggests more rapid motion in running than in those of the *confusa* type, or in *Lathrobium* or *Lathrobioma*, these being relatively slow in their movements. The species represented by material in my cabinet may be distinguished by the following characters: —

Form elongate, fusoid, the elytra always much longer as well as wider than the prothorax, the legs rather slender; antennae not longer than the head and prothorax, moderately slender, the medial joints less than twice as long as wide 2

Form subparallel, the elytra subequal in length to the prothorax or shorter; legs stouter, sometimes very stout in the male 5

2 — Gular sutures distinctly arcuate, gradually diverging posteriorly from near the middle; head smaller, distinctly narrower than the prothorax 3

Gular sutures almost straight, diverging only very near the base; head almost as wide as the prothorax 4

3 — Color black throughout, the legs and antennae rufous, polished, the abdomen dull; form very slender, the punctures of the head and elytra small, sparse, of the pronotum only moderately coarse and very sparse; head parallel, the basal angles very broadly rounded, beginning at one length of the eye behind the latter; neck fully half as wide as the head; prothorax distinctly elongate, about a fifth longer than wide, the sides parallel, arcuate anteriorly and posteriorly, the angles rather distinct; elytra distinctly longer than wide, parallel, almost a third wider than the prothorax and distinctly longer in both sexes; abdomen slightly narrower than the elytra, tapering behind. Male with the fifth ventral wholly unmodified, the sixth narrow, broadly rounded at tip, with a simple rounded sinus about a third as wide as the apex and between

two and three times as wide as deep, the surface very feebly impressed along the median line except toward base; female with the sixth ventral evenly rounded and feebly lobed at tip. Length 6.4 mm.; width 0.95 mm. Rhode Island (Boston Neck), Massachusetts (Lowell) and New York (near the city).....**rhodeana** n. sp.

Color piceous-black, the elytra dull rufous, blackish toward base, the legs and antennae pale testaceous; form and sculpture similar to the preceding, the elytral punctures more evenly serial in arrangement and the pronotal punctures decidedly coarser and less sparse; head rather less distinctly narrower than the prothorax, with the basal angles similarly very broadly rounded; prothorax a little broader and less elongate; elytra but little longer than wide, about a fourth wider and distinctly longer than the prothorax; abdomen distinctly narrower than the elytra. Male with the sixth ventral narrow, more strongly rounded at tip, with the median sinus similar, the surface not impressed except very obsoletely and in posterior half. Length 5.7 mm.; width 0.85 mm. Rhode Island (Boston Neck).....**semirubida** n. sp.

4 — Body somewhat stouter, less fusiform and more parallel, piceous-black throughout, the legs and antennae pale; punctures nearly as in *semirubida*, those of the pronotum sparser; head parallel, the basal angles less broadly rounded than in the preceding species; prothorax only very slightly longer than wide, the sides sensibly converging from apex to base and almost straight; elytra slightly longer than wide, much wider and longer than the prothorax; abdomen narrower than the elytra. Male not at hand; female with the sixth ventral as in *rhodeana*. Length 6.4 mm.; width 1.05 mm. Indiana and westward.....**concolor** Lec.

5 — Elytra large, equal in length to the prothorax in the female and but just visibly shorter in the male. Body large and stout, moderately convex, parallel, black throughout, the legs and antennae pale ferruginous; punctures of the head rather coarse, sparse, almost wanting broadly toward the middle, of the pronotum rather smaller and very sparse, irregular, of the elytra still smaller, fine, sparse, partially subserial, the abdomen dull, densely punctulate; head slightly smaller than the prothorax, more distinctly so in the female, parallel and feebly arcuate at the sides, the angles obtuse and narrowly rounded, rather distinct; antennae unusually long and slender, filiform, longer than the head and prothorax, the medial joints obconic and fully twice as long as wide; prothorax large, but little longer than wide, sides distinctly converging from apex to base, the angles moderately rounded; elytra large, distinctly wider than the prothorax, slightly longer than wide and parallel; abdomen broad, as wide as the elytra. Male with the fifth ventral rather broadly and strongly impressed along the middle except toward base, the apical margin broadly, feebly sinuate in more than middle third; sixth segment without impression, the apex rounded, with a large, narrowly rounded parabolic sinus, nearly a third as wide as the segment and nearly as deep as wide; legs throughout very stout; female a little smaller and more slender than the male, the sixth ventral distinctly lobed at apex, the lobe evenly rounded, the legs obviously less stout. Length 6.7–7.5 mm.; width 1.1–1.15 mm. New Jersey, Ohio (Ross Co.) and Iowa.....**cruralis** n. sp.

Elytra relatively smaller, always shorter than the prothorax in both sexes; smaller species 6

6 — Elytra equal in width to the prothorax; body deep black throughout, the legs and antennae pale ferruginous; form parallel, the integuments thicker; head much narrower than the prothorax, parallel and feebly arcuate at the sides, the angles broadly rounded; neck half as wide, the punctures rather fine, very sparse; antennae relatively thicker than in *cruralis*, although longer than the head and prothorax, the medial joints strongly obconic and somewhat less than twice as long as wide; prothorax only very slightly longer than wide, the sides just visibly converging from apex to base and very feebly arcuate; angles rather broadly rounded; punctures not very coarse but larger than those of the head, very sparse; elytra very nearly as long as wide, at base equal in width to the prothorax, just visibly wider at apex, the punctures fine and rather sparse, not definitely subserial; abdomen as wide as the elytra, dull; legs moderately stout in the male. Male with the fifth ventral unimpressed, the apex very feebly sinuate toward the middle, the sixth segment rounded at tip, with the usual parabolic sinus about a third as wide as the apex and but little wider than deep; female not known. Length 5.6 mm.; width 0.9 mm. Iowa (Iowa City), — Mr. Wickham. **convictor** n. sp.

Elytra obviously wider than the prothorax; body more or less pale piceous in color throughout, the legs and antennae paler and ferruginous, the former notably stout in the male and less so in the female; surface polished, the abdomen dull; form parallel and moderately convex... 7

7 — Elytra in the female distinctly shorter than wide, very much shorter than the prothorax; head much narrower than the prothorax, finely and very remotely punctate, nearly as in the preceding form throughout, the antennae similar, the neck rather wider, a little more than half as wide as the head; prothorax distinctly longer than wide, the sides obviously converging from apex to base, the angles rounded, the punctures noticeably coarse, confused and only moderately sparse; elytra rather depressed, the sides distinctly diverging from the base, the punctures somewhat fine, sparse and confused, but with the surface rather coarsely rugose by oblique light; abdomen not quite as wide as the elytra. Male unknown. Length 5.5 mm.; width 0.8 mm. Iowa.... **amputans** n. sp.

Elytra in the female fully as long as wide and but just visibly shorter in the male 8

8 — Male with the emargination of the sixth ventral smaller, much shallower, broadly rounded at the bottom, less than a third as wide as the segmental apex and between three and four times as wide as deep; fifth and sixth segments not distinctly modified on the disk, the former rectilinearly truncate at apex 9

Male with the emargination of the sixth ventral larger and deeper, but little wider than deep, triangular in form, with the anterior angle narrowly rounded 10

9 — Body moderately stout, the head as in *amputans* but with the basal angles rather less broadly rounded, the antennae longer and somewhat thicker, filiform, distinctly longer than the head and prothorax, with the medial joints almost twice as long as wide; punctures rather fine,

very remote, less sparse on the sides; prothorax more distinctly elongate, the sides feebly converging, the surface notably convex and unusually coarsely, deeply and conspicuously punctate, the punctures moderately sparse; elytra distinctly wider than the prothorax and but little, though distinctly, shorter, almost as long as wide, the sides very feebly diverging from the base and slightly arcuate throughout, the punctures fine, sparse and partially sublineate; abdomen broader than in *amputans*, as wide as the elytra. Female not known. Length 5.5 mm.; width 0.9. District of Columbia.....**inornata** n. sp.

Body nearly similar in form and coloration but decidedly more slender, the head nearly similar in form and sculpture but only just visibly narrower than the prothorax, the antennae distinctly shorter and relatively thicker, not as long as the head and prothorax, the medial joints scarcely more than a half longer than wide; prothorax notably narrower and more elongate; fully a fourth longer than wide, the punctures very sparse and less coarse; elytra relatively much smaller, fully as long as wide, with the sides feebly diverging, much shorter but only very little wider than the prothorax, similarly sculptured; abdomen a little narrower, fully as wide as the elytra. Male with the emargination of the sixth ventral similar in general form but still shallower and more gradually formed. Length 5.4 mm.; width 0.8 mm. New York (Dundee).
subgracilis n. sp.

10—Form moderately stout, the head only very slightly narrower than the prothorax, parallel and feebly arcuate at the sides, the basal angles broadly rounded, the punctures small and very sparse; antennae longer than the head and prothorax, stouter, the strongly obconic medial joints distinctly less than twice as long as wide; prothorax less elongate, a fifth or sixth longer than wide, the sides just visibly converging, the punctures rather fine and very sparse; elytra in the male much wider and distinctly shorter than the prothorax, not quite as long as wide, the sides rather strongly diverging throughout, the punctures fine and moderately sparse; in the female less distinctly wider and shorter than the prothorax, as long as wide, with the sides only very slightly diverging; abdomen not quite as wide as the prothorax in either sex. Male with the fifth and sixth ventrals wholly unmodified on the disk, the former rectilinearly truncate at apex, the sixth rounded at apex as usual, the triangular notch larger, nearly half as wide as the segmental apex and distinctly wider than deep; female rather smaller and more slender than the male. Length 5.3-5.8 mm.; width 0.8–0.9 mm. Massachusetts (Lowell) .....**confusa** Lec.

Form rather stouter, the head relatively more elongate, distinctly narrower than the prothorax, the sides longer and less arcuate and the angles somewhat less broadly rounded; antennae shorter and less stout, not longer than the head and prothorax, the medial joints less strongly obconical but less than twice as long as wide; punctures moderately sparse and distinct toward the sides; prothorax more elongate, a fourth longer than wide, the sides feebly converging and nearly straight, the punctures only moderately coarse and sparse; elytra in the male rather large, much wider and not very much, though distinctly, shorter than the prothorax, fully as long as wide, the sides distinctly diverging;

punctures fine and sparse; abdomen nearly as wide as the elytra. Male with the secondary sexual characters as in *confusa*, except that the apex of the sixth ventral is much more broadly and feebly rounded, with the triangular notch smaller, being about a third as wide as the apex and but little wider than deep. Length 5.6 mm.; width 0.9 mm. New York (near the city) and District of Columbia.....**suspecta** n. sp.

The three distinct groups of species in the above table are represented by *concolor*, *cruralis* and *confusa*, the first two, composed of larger species, having the elytra large, the last, with the elytra small, being composed of a considerable number of much smaller species. The fact stated of certain species of *Lathrobium*, that the female is smaller and more slender than the male, is still more obvious in this genus, being strikingly apparent in *cruralis* and *confusa*.

Lathrobiopsis n. gen.

We begin in this genus a series of groups, well distinguished from those which precede by the longer basal joint of the hind tarsi, this being as long as the second in the present genus and both slightly elongate. In addition to this, the first joint is similar to the second beneath and not swollen into a flattened sole. *Lathrobiopsis* differs very greatly from *Lathrobioma*, which has more the facies of *Lathrobium*, in its depressed form and small prothorax, with the median smooth line partially delimited by impressed series of punctures, large flattened elytra, with regular series of punctures and in other characters as shown in the table; our single representative at present is the following: —

Body slender, distinctly depressed, dark testaceous, the head dusky, the abdomen piceous-black; legs pale flavo-testaceous, the antennae dusky rufous; head quadrate, the sides long, parallel and nearly straight, the basal angles very distinctly right and but very slightly rounded; punctures rather coarse, deep, moderately sparse, a small vertexal space impunctate; antennae stout, longer than the head and prothorax, the medial joints one-half longer than wide, inflated and rounded at the sides and pedunculate at base; prothorax very slightly narrower than the head, not longer than wide, the sides evidently converging from apex to base and nearly straight, the apical angles distinct and not rounded, the punctures not quite as coarse as those of the head, confused and moderately sparse except along the broad impunctate

median area in basal three-fifths, where they are linear; elytra large, parallel, distinctly elongate, a third wider and one-half longer than the prothorax, the punctures similar in size to those of the pronotum but feebler, close-set in rather even unimpressed series throughout; basal angles not rounded; abdomen parallel, narrow, straight at the sides, only three-fourths as wide as the elytra, the fine punctulation not dense; legs slender. Male with the surface of the fifth and sixth segments wholly unmodified, the apex of the fifth rectilinearly trunctate, becoming very feebly sinuate in the median third or fourth, the sixth narrow, broadly rounded at tip, with a deep sinus about a third as wide as the apex, apparently rather deeper than wide and parabolic in form; female not known. Length 4.6 mm.; width 0.75 mm. Texas.

texana n. sp.

I have seen but a single specimen of this very delicate species and it is from an unrecorded part of the state.

Lathrobioma n. gen.

The species of this genus in their dense integuments, general form of the body, large head, and, especially, in their thick submoniliform antennae, greatly resemble *Lathrobium*, but the formation of the posterior tarsus prohibits any such association, the tarsi being shorter and more compact, with the four basal joints subequal and mutually similar, each having in general two long oblique setae projecting anteriorly from the anterior margin beneath, the fourth joint sometimes a little smaller, the first about as long as the second and not elongate, not obliquely produced beneath the base of the second and without trace of the expanded sole characterizing *Lathrobium*; the fifth joint is frequently nearly as long as the first four combined. The species are smaller than those of *Lathrobium*, comprising some of the more minute of the Lathrobia, have smaller eyes and are more slender as a rule. They extend over the same geographical range in America, to which region they may possibly be confined, and are moderately numerous, those represented in my cabinet being distinguishable as follows : —

Elytra larger, as long as the prothorax or longer and notably wider, the body broader and less convex; elytral punctures more or less irregularly lineate in arrangement..... 2

Elytra small, never much wider and always distinctly shorter than the prothorax, the body more slender and rather more convex 6

2 — Head as wide as the elytra — probably in both sexes..... 3

Head much narrower than the elytra in the female, possibly less obviously so in the male..... 4

3 — Body rather stout, parallel, shining, black throughout, the sutural margin and line of the apex rufescent; legs and antennae dark testaceous; head large, sparsely punctured, much wider at base than across the eyes, the sides straight, the angles narrowly rounded; neck barely half as wide; antennae thick, not quite as long as the head and prothorax, joints two and three equal, about one-half longer than wide, the fourth a little shorter, the outer joints not longer than wide, rounded; prothorax three-fourths as wide as the head, distinctly elongate, subparallel, the sides just visibly converging, the angles rather distinct and but little rounded, the punctures larger than those of the head, coarse and only moderately sparse; elytra fully a fourth wider and a fifth longer than the prothorax, parallel, distinctly longer than wide, the punctures coarse, moderately sparse and only very obscurely and partially sublineate; abdomen distinctly narrower than the elytra, parallel and straight at the sides, finely, not closely punctulate, shining; legs moderately slender, the hind tarsi three-fourths as long as the tibiae. Male unknown; female with the sixth ventral broadly, evenly rounded, scarcely lobed. Length 5.8 mm.; width 0.97 mm. Virginia (Grafton).

virginica n. sp.

Body more slender, parallel, deep polished black throughout, the legs piceous-black, the antennae fuscous; head narrower and more oval, parallel and broadly arcuate at the sides, the basal angles rather broadly rounded, the neck rather more than half as wide, the eyes moderately developed, at about three times their own length from the base; punctures moderately coarse, deep and sparse; antennae thick, nearly as in *virginica;* prothorax four-fifths as wide as the head, distinctly elongate, subparallel, the sides nearly straight, the punctures but little larger than those of the head, rather feeble and very sparse, deeper and more closely aggregated along the median smooth line but not lineate; elytra rather finely, sparsely punctate, longer than wide, parallel, about a fifth wider than the prothorax but not quite as long in the male, probably fully as long in the female; abdomen parallel, straight at the sides, nearly as wide as the elytra, convex, finely, sparsely punctulate. Male with the fifth ventral moderately impressed and subglabrous in the middle, except toward base, the apical margin very feebly and gradually sinuate in the middle; sixth with a declivous parallel polished impunctate and deep excavation in median fourth or more, beginning near the base, the apex with a quadrate emargination as wide as the impression, the sides of which are parallel and formed in part by dentiform prolongations of the sides of the excavation, the bottom transversely sinuate; female unknown. Length 5.9 mm.; width 0.85 mm. Oregon.

shoshonica n. sp.

4 — Elytra equal in length to the prothorax; species very small in size. Body moderately stout, subparallel, deep black throughout, the legs and antennae piceo-rufous; head quadrate, as long as wide, parallel and

straight at the sides, the angles rather narrowly rounded, the eyes moderately small and rather convex; punctures coarse and only moderately sparse; antennae thick, distinctly shorter than the head and prothorax, gradually thicker distally, the outer joints not quite as long as wide; prothorax subparallel, distinctly longer than wide, obviously narrower than the head, the punctures coarse, deep, moderately sparse and evenly, though irregularly, distributed; elytra subparallel, longer than wide, a fourth wider than the prothorax, the punctures fine, sparse and sublineate; abdomen slightly narrower than the elytra, parallel, minutely and rather closely punctulate. Male not at hand; female broadly rounded and feebly lobed at tip of the sixth ventral. Length 4.1 mm.; width 0.75 mm. Massachusets (Lowell), — Mr. F. Blanchard. **nanula** n. sp.

Elytra much longer and wider than the prothorax..... 5

5 — Form rather stout and only moderately convex, pale brownish-flavate in the body and legs, the head, antennae, and, to a less extent, the prothorax, slightly infuscate — the type probably somewhat immature; surface shining; head rather longer than wide, parallel and nearly straight at the sides, the angles rather broadly rounded, the neck more than half as wide; punctures moderately coarse and rather sparse; antennae thick but not enlarged distally, obviously shorter than the head and prothorax, the outer joints shorter than wide; prothorax about a fifth longer than wide, only very slightly narrower than the head, the sides distinctly converging; punctures only moderately coarse, equal to those of the head but sparser; elytra unusually large, parallel, longer than wide, a third wider and a fourth longer than the prothorax, the somewhat coarse punctures arranged in nearly even series; abdomen distinctly narrower than the elytra, straight and parallel at the sides, rather closely, finely punctulate; legs moderately stout, the hind tarsi scarcely three-fourths as long as the tibiae. Male unknown, the sixth ventral of the female evenly and broadly rounded behind. Length 5.5 mm.; width 0.9 mm. Dakota (Bismarck).....**dakotana** n. sp.

Form similar but rather less stout, deep shining black throughout, the legs and antennae piceous-black; head narrower and more elongate, parallel and straight at the sides, the angles broadly rounded; eyes at between three and four times their own length from the base; antennae thick, much shorter than the head and prothorax, the outer joints wider than long; prothorax much narrower, distinctly narrower than the head and longer than wide, subparallel, the punctures moderately coarse, deep and sparse; elytra longer than wide, parallel, two-fifths wider and nearly a third longer than the prothorax, the punctures moderately fine and sparse and less distinctly serial than in *dakotana;* abdomen almost as wide as the elytra, straight at the sides, finely and rather closely punctulate; legs moderately stout. Male unknown; female with the sixth ventral convex, broadly rounded at tip. Length 5.4 mm.; width 0.85 mm. British Columbia.....**hespera** n. sp.

— Head parallel at the sides in both sexes..... 7

Head broadest near the base, at least in the male, sometimes parallel in the female..... 8

— Body slender, convex, parallel, deep shining black throughout, the legs

ferruginous; antennae dusky; head oblong, slightly elongate, the sides very feebly arcuate; angles moderately broadly rounded; neck much more than half as wide, the punctures moderately coarse and sparse; antennae moderately stout, not enlarged distally, not as long as the head and prothorax, the outer joints nearly as long as wide; prothorax nearly a fourth longer than wide, rather narrow, much narrower than the head, subparallel, the punctures coarse and not very sparse; elytra slightly wider than the prothorax and but little shorter, not quite as wide as the head, slightly longer than wide, the sides very feebly diverging, the punctures rather small and sparse but distinct, subserial; abdomen at base as wide as the elytra, a little wider at the apex of the fourth segment, shining, minutely and not densely punctate. Male with the fifth ventral feebly impressed in the middle toward tip, the apex transverse and unmodified, the sixth with a deep, slightly diverging excavation in rather more than median fourth, beginning near the base, the bottom polished and rapidly declivous to the emargination, which is somewhat wider than deep, the lateral projections, partially forming the latter, obtuse and bearing each a small fringe of spiculiform hairs; female with the elytra fully as long as the prothorax and distinctly wider, the sixth ventral obtusely rounded. Length 4 8–5.8 mm.; width 0.78 mm. Massachusetts (Lowell), Rhode Island (Boston Neck), New Jersey and Iowa..... **othioides** Lec.

8 — Elytra only slightly shorter than the prothorax; body deep shining black in color throughout..... 9

Elytra very much shorter than the prothorax in both sexes; body blackish-piceous to paler in color when mature..... 11

9 — Processes of the sixth ventral in the male diverging posteriorly. Body very slender, parallel, the tip of the abdomen feebly rufescent; legs rather bright rufous, the antennae somewhat dusky; head rather longer than wide and distinctly wider than the elytra, only slightly broader toward base, the sides feebly arcuate, the angles broadly rounded; punctures moderately coarse and sparse; eyes notably small, the antennae thick, slightly enlarged distally; prothorax much elongated, parallel, distinctly narrower than the head, fully a fourth longer than wide, the punctures somewhat coarse, uneven in distribution, rather more densely aggregated along the median smooth line; elytra in the male but little longer than wide, just visibly wider than the prothorax and about four-fifths as long, in the female distinctly wider than the prothorax, very nearly as long and fully as wide as the head; punctures moderately fine and sparse but distinct and scarcely lineate; abdomen parallel, not quite as wide as the elytra, shining, the fine sculpture not dense. Male with the fifth ventral feebly impressed in the middle in apical half, the apex transverse, the sixth with the usual narrow deep excavation not extending to the base, more broadly expanding posteriorly than in the preceding species, the processes more angulate and separated at tip by nearly half the width of the segment, the emargination much wider than deep, the bottom evenly rounded; declivous floor of the excavation broadly thinner and translucent posteriorly. Length 5.0 mm.; width 0.7 mm. Rhode Island (Boston Neck)..... **tenuis** Lec.

Processes of the sixth ventral in the male inflexed toward tip; legs and antennae darker, piceo-rufous in color.....10

10 — Body smaller and more slender; head but little longer than wide, the sides nearly straight and distinctly diverging posteriorly from the moderately small eyes to the basal angles, which are not very broadly rounded; punctures sparse, not very coarse; antennae short and very stout, much shorter than the head and prothorax, slightly enlarged distally, the outer joints wider than long; prothorax about a fifth longer than wide, very slightly narrower than the head, the sides slightly converging, the punctures moderately coarse and sparse; elytra in the male fully as wide as the head, much wider than the prothorax and very nearly as long, subparallel and a little longer than wide; in the female proportioned almost similarly but relatively more elongate in form; punctures rather small and sparse; abdomen subparallel, not quite as wide as the elytra. Male with a narrow deep subglabrous impression at the middle of the fifth ventral in more than apical half, the apex very feebly sinuato-truncate; sixth with the usual deep parallel excavation with declivous glabrous floor, the apical emargination deep, parallel, circularly rounded at the bottom, the processes forming part of its sides acute and slightly flexed toward each other; female slightly more slender than the male. Length 5.0 mm.; width 0.7 mm. Manitoba (Winnipeg).....**nigrolinea** n. sp.

Body larger and rather stouter in form, parallel; head larger but only very slightly enlarged posteriorly, the sides more or less distinctly arcuate and the basal angles more broadly rounded; punctures moderately coarse and rather close-set; antennae moderately stout, not sensibly enlarged distally; prothorax nearly as in *nigrolinea* but broader and less elongate, distinctly narrower than the head, strongly, moderately sparsely punctured; elytra finely, sparsely, sublinearly punctate in the male, distinctly longer than wide, parallel, slightly wider and a little shorter than the prothorax, not as wide as the head; in the female similar but very slightly more elongate and only just visibly shorter than the prothorax; abdomen parallel, not quite as wide as the elytra, minutely, not closely punctulate. Male with secondary sexual characters nearly as in the preceding species, the excavation of the sixth ventral not extending quite so far toward the base of the segment; female nearly similar to the male but with the head a little smaller and not wider than the elytra. Length 6.0 mm.; width 0.88 mm. Oregon (Portland), — Mr. H. F. Wickham.....**oregona** n. sp.

11 — Body moderately slender, shining, dark rufo-piceous, the abdomen black, becoming rufescent at tip, the legs ferruginous; antennae dusky; head longer than wide, obviously wider than the elytra in both sexes, very slightly wider toward base, the sides feebly arcuate and the angles broadly rounded, eyes moderate; antennae very stout, slightly enlarged distally; punctures strong, moderately sparse; prothorax very slightly narrower than the head, not quite a fourth longer than wide, the sides only just perceptibly converging, the punctures strong, coarse and somewhat closer than usual; elytra in the male parallel, slightly longer than wide, equal in width to the prothorax and scarcely more than three-fourths as long, the surface rather more uneven than usual,

sparsely, not very coarsely punctate; in the female quadrate, distinctly wider than the prothorax though much shorter; abdomen nearly as wide as the elytra, minutely and more closely punctured than usual. Male with the fifth ventral rather narrowly and feebly impressed along the middle, the impression beginning near the base and extending, slightly broadening, to the apex, the latter rectilinearly truncate; sixth ventral with a large oval shallow and clearly limited impression, clothed with sparse spiculiform hairs and extending from near the base to the apex, where there is a small emargination, slightly wider than deep, narrower than the impression — which is a third as wide as the segment — and enclosed between very short projecting processes. Length 5.5 mm.; width 0.82 mm. Massachusetts (Lowell), — Mr. F. Blanchard..... **scolopacea** n. sp.

Body nearly similar to the preceding but a little larger and more slender, pale brownish-testaceous throughout, the abdomen blackish except toward tip; antennae dusky; head suboval, slightly wider than the elytra in the male, equal thereto in the female, very feebly enlarged toward base in the male, parallel in the female, the sides very feebly arcuate; basal angles less rounded than in *scolopacea*; antennae nearly similar; punctures rather sparser; prothorax narrower and more elongate, distinctly narrower than the head in both sexes, less strongly punctured; elytra similar in the sexes, barely as long as wide, with the sides obviously diverging, very slightly wider and much shorter than the prothorax, feebly and sparsely punctate; abdomen subparallel, a little narrower than the elytra, minutely, not very closely punctulate. Male with the fifth ventral broadly, feebly impressed in more than median fourth from a little before the middle to the apex, the latter truncate; sixth with a shallow oval impression and apical emargination nearly as in *scolopacea*. Length 5.8 mm.; width, 0.78 mm. Lake Superior..... **inops** Csy.

It will be observed that the secondary sexual characters of the male remain virtually constant in type throughout and constitute as valid a generic character as any other structural modification. These characters are modified to some extent, as a matter of course, giving such forms as described under *othioides*, *nigrolinea* and *scolopacea*. The form of the modification of the sixth ventral in the *nigrolinea* group, reminds us of the form assumed in certain Scopaei, notably *Scopaeoma*. *Inops* was united with *othioides* some years ago, as a synonym of that species, but there is no close resemblance between them.

Lathrolepta n. gen.

This genus is well distinguished from any of the preceding by the form of the gular sutures, the narrow, deep, acutely

angulate notch of the labrum, dividing the latter into two quadrate lobes and the less strongly dilated anterior tarsi. It differs from *Lathrobium* and allied genera, also in the form of the hind tarsi, which have the four basal joints small and subequal. It is represented at present by a single very small species, having the general facies of *Lathrobioma*, and of wide distribution, which may be readily recognized by the following characters: —

Parallel, slender, convex, shining, dark piceous or blackish in color, the legs and antennae fusco-testaceous, the abdomen darker than the anterior parts; head as wide as the elytra, parallel at the sides, the angles somewhat narrowly rounded, the punctures rather strong and sparse; antennae thick, scarcely as long as the head and prothorax, submoniliform, distinctly incrassate distally, with the outer joints a little wider than long; prothorax narrow and elongate, parallel, distinctly narrower than the head and still more coarsely and strongly punctate, the punctures not very sparse and not serial; elytra short, scarcely as long as wide, much shorter than the prothorax, at base a little wider than the latter, at apex more obviously wider, the sides diverging from the base; punctures smaller, sparse and rather confused; abdomen at base as wide as the elytra, slightly wider behind, finely, not densely punctate; legs moderately stout. Male with the third and fourth ventrals narrowly and feebly impressed along the middle, the fifth more widely and strongly impressed throughout in median fifth or sixth, the apex broadly sinuato-truncate, the sixth not obviously impressed, though broadly, indefinitely so toward base, but with a large discal patch of short black spicular hairs at each side of the median line, the apex broadly subtruncate, with a gradually formed, broadly rounded, shallow median sinus, about a third as wide as the segment and five times as wide as deep; female somewhat stouter than the male, the sixth ventral with a broad feeble and broadly rounded lobe at tip, unimpressed. Length 3.3 mm.; width 0.5 mm. New York (near the city), Massachusetts (Lowell) and Iowa; Michigan, — LeConte.. **debilis** Lec.

The type is one of the smallest known species of the Lathrobia; it does not seem to be rare and varies considerably in shade of color, possibly due to immaturity. It will be noticed that the female is stouter than the male — and not more slender, as is evidently the case with many of our larger Lathrobia.

Tetartopeus Czwl.

We arrive here at a succession of forms, the chief distinguishing character of which is the narrow neck — similar

to that of *Domene*. They are of more or less robust form, of small to moderately large size and are gradually pointed anteriorly, being widest at the elytra, with the prothorax and head decreasing in width, giving them a somewhat fusiform outline. The maxillary palpi are long and notably slender in the present genus, the fourth joint being unusually slender and aciculate, the antennae more or less long, slender and filiform, with the hind tarsi as in *Lathrobium*. The elytra are always larger and more closely punctate than in that genus, without trace of linear arrangement. The slender neck is undoubtedly a most significant and conclusive generic character and *Tetartopeus* should in no wise be considered a subgenus of *Lathrobium*. The species are rather numerous and very widely distributed over the holarctic regions of the earth, extending as far south in North America as Florida and Texas, but most abundant in the colder sections of the northern continents. Those represented by material in my cabinet may be readily known as follows: —

Elytra at least as long as the prothorax, and, in all but very rare cases, decidedly longer 2

Elytra shorter than the prothorax, the body more parallel 16

2 — Elytra red or piceous, sometimes clouded with blackish toward base or near the suture, never abruptly paler at apex or at the external apical angles 3

Elytra black or blackish, with the external apical angles more or less abruptly pale, the pale tint sometimes extending across the apex 9

Elytra intense black throughout; the entire body black, the legs dark 14

3 — Prothorax deep black 4

Prothorax pale testaceous, similar in color to the elytra 8

4 — Head parallel or only very feebly and gradually narrowed behind the eyes and then only in the female 5

Head very obviously narrowed behind the eyes in both sexes 7

5 — Prothorax not very coarsely and unusually sparsely punctate. Body moderately stout and convex, polished black, the elytra dark piceo-rufous; head parallel at the sides behind the eyes, the base semicircularly rounded; eyes at three-fourths more than their own length from the base, measured on the median line as usual; antennae scarcely as long as the head and prothorax and rather thicker than usual, the medial joints about two-thirds longer than wide; prothorax very much wider than the head, oblong, broad, only slightly longer than wide, highly polished, very sparsely and somewhat inconspicuously punctured; elytra quadrate, parallel, a third wider and about a fourth longer than the prothorax, fully as long as wide, the punctures rather close-set

and unusually coarse and deep; legs moderately long, not very stout. Male with ventrals two to four feebly impressed along the middle, the impression of the fifth subobsolete; sixth broadly arcuato-truncate at tip, with a very small deep and acutely angulate notch, deeper than wide and not more than a tenth or twelfth as wide as the apex, partially concealed by the pubescence as usual; disk not distinctly modified. Length 6.8 mm.; width 1.25 mm. Montana (Kalispell), — Mr. Wickham ..... **captiosus** n. sp.

Prothorax strongly and more coarsely punctate, the punctures more or less close-set 6

6 — Antennae of the male very slender, rather longer than the head and prothorax, with the medial joints rather more than twice as long as wide, shorter and relatively thicker in the female, with the medial joints distinctly less than twice as long as wide. Body rather stout, the head semicircularly rounded, the eyes well developed, the surface more finely and closely punctured than in *captiosus*, a little narrower in the female than in the male and with the sides feebly converging behind the eyes; prothorax oblong, broad, only slightly longer than wide, much wider than the head, the median impunctate line narrow; elytra in the male quadrate, a third wider and a fifth longer than the prothorax; in the female slightly longer than wide, two-fifths wider and more than a fourth longer than the prothorax; punctures close-set and only moderately coarse, similar in size to those of the pronotum. Male with ventrals two to five subequally and feebly impressed along the middle, the sixth with a small deep and acutely angular notch as in the preceding species; female with the sixth ventral greatly produced in an obtusely rounded lobe, unimpressed, the body smaller and less stout than in the male. Length 6.0–7.0 mm.; width 1.2–1.26 mm. Massachusetts, Canada, New York, New Jersey, Iowa and North Dakota (Devil's Lake) .. **punctulatus** Lec.

Antennae of the male thicker, longer than the head and prothorax but with the medial joints somewhat less than twice as long as wide; in the female still thicker, barely as long as the head and prothorax, with the medial joints about one-half longer than wide. Body resembling *punctulatus* throughout in color and sculpture, but a little stouter, with slightly smaller eyes, and with the male and female similar in form and very nearly so in size, the head in the female being somewhat narrower but not noticeably narrowed behind the eyes. Male with the second and third ventrals unimpressed, the fourth and fifth rather broadly and very feebly impressed along the middle, the sixth with a very small triangular notch, deeper than wide, nearly as in the preceding species but a little less deep and rather broader at the opening, the surface with the pubescence denser in the region of the notch as usual. Length 7.0 mm.; width 1.3 mm. Idaho (Priest River), — Mr. Wickham.

hebes n. sp.

7 — Body smaller in size than the preceding and obviously more slender, black, with the elytra bright rufous; head small, longer than wide, finely, not densely punctate, the sides converging for some distance behind the the eyes, then circularly rounded at base; eyes well developed, the antennae somewhat longer than the head and prothorax, moderately slender, the medial joints fully twice as long as wide; prothorax

rather narrow, parallel and elongate, much wider than the head, moderately closely and coarsely punctured; elytra parallel, slightly elongate, two-fifths wider and one-fifth longer than the prothorax in the male, the punctures rather small but strong and close-set. Male with the second ventral unmodified, the third narrowly and moderately impressed along the middle, more strongly behind; fourth narrowly and rather strongly impressed throughout, the fifth also strongly and less narrowly, the impression transversely divided in the middle; sixth with a broad and shallow cuspidiform emargination, much wider than deep, the apical lobes very broadly rounded, the surface densely pubescent in the region of the emargination; female differing but little from the male, the antennae slightly thicker but equally elongate, the prothorax relatively shorter. Length 6.0 mm.; width 1.05 mm. Massachusetts to Iowa..... .....**rubripennis** n. sp. (Fvl. MS.)

Body somewhat similar to the preceding in size and form, the prothorax notably larger and broader; elytra pale piceo-rufous in color; head slightly broader, finely, not densely punctate, the eyes well developed; antennae still longer, equally slender, longer than the head and prothorax, the medial joints somewhat more than twice as long as wide in the male; prothorax broad, but slightly longer than wide, very much wider than the head, parallel, the sides feebly arcuate, the angles broadly rounded; punctures not very coarse and moderately close-set; elytra slightly longer than wide, parallel, about a third wider and more than a fourth longer than the prothorax; punctures rather coarse and close-set. Male with the third ventral not distinctly impressed, the fourth narrowly and rather strongly so along the middle, the fifth less narrowly, deeply and subovally so throughout the length, the impression faintly divided transversely at the middle; sixth with a narrow very deep angular notch, much larger in size than that of *punctulatus* and allies, fully twice as deep as wide, with its opening an eighth or ninth as wide as the segmental apex, the notch rendered obscure to low amplification by reason of the dense obtruding pubescence; female unknown. Length 6.7 mm.; width 1.2 mm. Indiana? Cab. Levette.

callidus n. sp.

8 — Form narrower and more parallel than usual, black, the prothorax and elytra rufous, the latter clouded with blackish toward suture and base; head orbicular, rather longer than wide, finely, very sparsely punctate, closely so at the sides, the eyes moderate; antennae long and very slender, much longer than the head and prothorax, the medial joints distinctly more than twice as long as wide; prothorax oblong, distinctly wider than the head, a fifth or sixth longer than wide, the punctures rather coarse and uneven, not very close-set; elytra quadrate, a fourth wider but only very slightly longer than the prothorax, rather coarsely unevenly and moderately closely punctate. Male with the fourth and fifth ventrals narrowly and just visibly flattened along the middle, not impressed, the sixth with a very minute sharply angulate median notch, much deeper than wide and narrower than in *punctulatus*, almost concealed by the dense vestiture clothing the surface toward the notch; female unknown. Length 7.5 mm.; width 1.15 mm. Iowa.

semiruber n. sp.

9 — Head not distinctly narrowed behind the eyes in the male; antennae long, more or less slender, much longer than the head and prothorax.10
Head obviously narrowed gradually from the eyes to the rounded base; legs pale; antennae infuscate, paler toward base and apex.....12

10 — Small species, unusually slender in form, dark piceous in color, the head and abdomen black, the elytral apex narrowly, more broadly externally, and legs, very pale; antennae fuscous, pale toward base and apex; head a little longer than wide, the sides subparallel and feebly arcuate for a long distance behind the eyes, the base broadly, subcircularly rounded; eyes moderate, at fully twice their own length from the base; punctures fine and rather sparse laterally, broadly wanting in the middle; antennae long and slender, nearly half as long as the body, the medial joints twice as long as wide; prothorax distinctly elongate, parallel and feebly arcuate at the sides, the angles broadly rounded, just visibly wider than the head, rather coarsely but feebly and somewhat sparsely punctate, the median impunctate line unusually wide; elytra well developed, parallel, slightly elongate, one-half wider and a fourth longer than the prothorax, rather finely feebly and sparsely punctate; abdomen distinctly narrower than the elytra, densely punctulate and dull as usual. Male unknown; female with the sixth ventral obtusely rounded at tip, unimpressed. Length 4.5 mm.; width 0.78 mm. Florida (Capron) ..... **floridanus** n. sp.
Species larger in size and stouter, not less than 6 mm. in length.....11

11 — Antennae in the male longer, the medial joints nearly two and one-half times as as long as wide. Body rather stout, deep black throughout, the external apical angles of the elytra abruptly and clearly pale flavotestaceous; legs very pale; antennae blackish, except the pale first and eleventh joints; head rather well developed, not much longer than wide, subparallel and feebly arcuate for about one length behind the eyes, the base thence semicircular or feebly subtruncate toward the middle; punctures minute and rather close-set, wanting at the middle of the vertex; eyes well developed; antennae longer than the head and prothorax, moderately slender; prothorax large and broad, only very slightly longer than wide, not very coarsely but strongly, rather sparsely punctate, much wider than the head, the sides broadly arcuate, the median smooth line rather ill-defined at the sides; elytra quadrate, not at all longer than wide, parallel, a third wider but only just visibly longer than the prothorax in the male, a little longer than wide and distinctly longer than the prothorax in the female, the punctures small, rather sparse and feeble; abdomen but little narrower than the elytra. Male with the second ventral slightly flattened, the third and fourth rather broadly and very feebly impressed along the middle, the fifth rather less broadly but less feebly impressed, the apex feebly sinuate at the middle; sixth with a small, acutely triangular notch, deeper than wide, about an eighth or ninth as wide as the apex, the surface somewhat elevated gradually — and more pubescent — toward the notch, not impressed, the apex truncate; female nearly as large but less stout throughout than the male, the sixth ventral with a narrowly rounded produced apical lobe. Length 7.0-7.7 mm.; width 1.2-1.25 mm. Massachusetts (Lowell) and Rhode Island..... **angularis** Lec.

Antennae in the male less elongate, about equally slender, the medial joints not quite twice as long as wide. Body less stout, black, the elytra slightly piceous, the pale spot at the outer angles broader and rather less abruptly defined; legs very pale, the antennae fuscous; head nearly as in the preceding species but smaller and narrower, less finely punctate and more evenly semicircular at the base; antennae scarcely longer than the head and prothorax, the latter narrower and more distinctly elongate, much wider than the head, the sides parallel and distinctly arcuate, the punctures equally strong and coarse and rather less sparse; elytra slightly elongate, parallel, similarly, though less sparsely, punctate, two-fifths wider and a fourth longer than the prothorax; abdomen but little narrower than the elytra. Male with the second and third ventrals unmodified, the fourth very feebly impressed toward apex only, the fifth equally feebly impressed throughout the length, the apex feebly sinuate at the middle, the sixth with a very narrow and acutely angulate notch, much deeper than wide, not more than a twelfth as wide as the apex, the latter inwardly and anteriorly oblique and truncate at each side of the notch and not transverse as in *angularis*, the surface as in that species; female nearly similar to the male, except that the sides of the head are obviously converging behind the eyes. Length 6.4 mm.; width 1.15 mm. Massachusetts (locality unknown).

furvulus n. sp.

12 — Median smooth line of the pronotum normally wide and distinct. Body rather small in size and of less stout form, deep black, the prothorax and elytra with a scarcely discernible piceous tinge, the outer angles of the latter pale; head rather finely and sparsely punctate, the eyes rather smaller and more prominent than in the two following, the sides behind them strongly converging and nearly straight, then broadly, circularly rounded at the base; prothorax oblong, parallel, rather distinctly elongate, with the sides broadly arcuate, only very slightly wider than the head, the punctures notably coarse, deep and moderately sparse; elytra slightly elongate, parallel, a third wider and a fifth longer than the prothorax, less coarsely but rather strongly and about equally sparsely punctate, somewhat rugose by oblique reflection as usual; abdomen as wide as the elytra. Male not known; female with the sixth ventral briefly lobed, the lobe arcuately truncate at tip; surface not at all impressed. Length 6.0 mm.; width 1.0 mm. Pennsylvania (near Philadelphia).....**nigrescens** n. sp.

Median smooth line of the pronotum narrow and generally subeffaced; species larger and stouter, black, sometimes with a feebly piceous tinge.....13

13 — Body moderately stout, the pale spot at the outer elytral angles large; head narrow, longer than wide, minutely, rather closely punctate laterally, subimpunctate toward the middle, the sides behind the eyes rapidly converging and nearly straight almost to the base, which is arcuately subtruncate; antennae slender, much longer than the head and prothorax, the medial joints more than twice as long as wide in the male; prothorax moderately broad, distinctly wider than the head and longer than wide, the sides parallel and broadly arcuate, the punctures rather coarse, deep and close-set, gradually becoming fine and sparse

toward the sides as usual; elytra quadrate, a third wider and a fifth longer than the prothorax, the punctures rather fine but distinct and somewhat close-set. Male with sexual characters nearly as in *rubripennis*, the third ventral narrowly and just visibly impressed along the middle, the fourth less narrowly and more strongly, the fifth still more strongly though not deeply, the sixth convex, more densely pubescent as usual toward the middle and apex, the latter very broadly and obtusely bilobed, the lobes separated by a broad shallow and acutely cuspidiform emargination; female not known. Length 6.8 mm.; width 1.2 mm. New York (near the city).....**agitaus** n. sp.

Body nearly similar in form but larger; head longer than wide, finely, rather closely punctate toward the sides, the latter converging and nearly straight for only the length of the large eyes behind them, then broadly arcuate across the base; antennae in the female as long as the head and prothorax, moderately slender, the medial joints fully twice as long as wide; prothorax rather broad, much wider than the head, about a fifth longer than wide, the sides parallel and broadly arcuate, the punctures only moderately coarse but deep and rather close-set; elytra quadrate, fully as long as wide, parallel, about a third wider but only very slightly longer than the prothorax, the punctures fine, rather feeble and closer than usual; abdomen slightly narrower than the elytra. Male unknown; female with a narrow produced and evenly rounded apical lobe of the sixth ventral, the surface with a distinct narrow impression along the median line just behind the middle, extending only to the base of the lobe. Length 7.5 mm.; width 1.25 mm. Texas (Austin).....**tetricus** n. sp.

14 — Head in the female broadly truncate and arcuate at base, subequal in width to the prothorax. Body moderately slender, deep black throughout the body, legs and antennae, the tarsi slightly paler; head broad, barely as long as wide, the sides parallel and nearly straight for the length of the eye behind the latter, then moderately broadly rounded through the basal angles, the base feebly arcuate; eyes moderate, at nearly twice their own length from the base, the punctures very fine; antennae longer than the head and prothorax, the medial joints about two-thirds longer than wide; prothorax rather small and broad, but little longer than wide, just visibly wider than the head, parallel and feebly arcuate at the sides, the punctures moderately coarse, strong and somewhat close-set; elytra parallel, slightly elongate, rather strongly and moderately closely punctate, two-fifths wider and two-fifths longer than the prothorax; abdomen distinctly narrower than the elytra. Male not at hand; female with the sixth ventral broadly rounded and feebly lobed at tip, not impressed. Length 6.0 mm.; width 1.05 mm. Vancouver Island.....**finitimus** Lec.

Head in both sexes semicircularly rounded at base, the species smaller and narrower in form.....15

15 — Eyes smaller, situated at about twice their own length from the base — measured on the median line. Body rather narrow, intense black throughout, the legs and antennae concolorous, the tarsi piceous-black; head slightly elongate, broadly arcuate from the eyes through the base, becoming nearly parallel for fully the length of the eye be-

hind the latter, finely, rather closely punctured laterally; anteunae moderately slender, about as long as the head and prothorax in the female, the medial joints distinctly less than twice as long as wide; prothorax much wider than the head, distinctly elongate, being longer and narrower than in *finitimus*, parallel and almost perfectly straight at the sides, strongly and rather closely punctate; elytra parallel, much elongated, strongly, somewhat closely punctate, about two-fifths longer and wider than the prothorax; abdomen slightly narrower than the elytra. Male unknown; female with the sixth ventral unimpressed, distinctly lobed at tip, the lobe moderately broadly rounded at apex. Length 6.0 mm.; width 0.95 mm. Montana (Kalispell).. **stibium** n. sp.

Eyes larger, well developed, at distinctly less than twice their own length from the base. Head nearly as in *stibium*, the antennae rather distinctly longer than the head and prothorax, moderately slender, the medial joints slightly less than twice as long as wide in the female but very nearly that in the male; prothorax a little broader and less elongate, parallel and sensibly arcuate at the sides, distinctly wider than the head in the female and much wider in the male, strongly, somewhat closely punctured, the smooth median line narrow and sometimes almost obliterated; elytra much broader in both sexes, but little longer than wide, a third wider and a fourth longer than the prothorax in the male, two-fifths wider and a fourth longer in the female, the punctures fine but distinct, moderately close-set; abdomen obviously narrower than the elytra in both sexes; body black throughout, the legs black when mature, with the tarsi slightly paler, the hind tarsi four-fifths as long as the tibiae. Male with ventrals one to four unmodified, the fifth narrowly and rather strongly impressed along the median line throughout; sixth transversely truncate at tip, with a small and very narrow, acutely angulate notch, much deeper than wide and not more than a twelfth or fourteenth as wide as the apex; pubescence not materially denser in the neighborhood of the notch; female with the sixth ventral broadly and obtusely lobed at apex. Length 5.8 mm.; width 1.1 mm. Massachusetts, Michigan and Wisconsin (Bayfield)..... **niger** Lec.

16 — Body parallel, deep black throughout, the legs pale, the antennae infuscate, slightly paler toward base; head small, rather longer than wide, arcuately subtruncate at base, not very finely and somewhat sparsely punctate toward the sides, the latter parallel and slightly arcuate; basal angles broadly rounded; eyes rather smaller than usual, the antennae relatively stout, fully as long as the head and prothorax, the medial joints but little more than one-half longer than wide; prothorax large and greatly developed, unusually convex, very much wider than the head, distinctly elongate, the sides parallel and feebly arcuate; anterior angles moderately rounded, the punctures coarse, deep and unusually sparse, gradually finer laterally as usual, the median smooth line well defined; elytra very slightly wider than the prothorax and about four-fifths as long, not quite as long as wide, depressed, the sides feebly diverging from the basal angles, the surface rugose but polished, rather finely but strongly, sparsely punctured; abdomen about as wide as the elytra, dull as usual. Male with the fourth ventral just visibly, the fifth more distinctly but feebly, impressed along the middle, the

sixth with a small and acutely angulate incisure, much deeper than wide and a ninth or tenth as wide as the apex, the latter at each side inwardly and anteriorly oblique and rectilinearly truncate, with the edge beveled, becoming very thin and translucent, the surface with longer hairs along the margins of the notch; female unknown. Length 4.7 mm.; width 0.82 mm. Canada (Toronto).....**lacustris** n. sp.

In the third supplement to the Henshaw catalogue it is stated on page 10, that No. 2514 (*niger* Lec.), is a synonym of the European *quadratus* Payk. This must surely be in error for No. 2512 (*punctulatus* Lec.), as specimens of *quadratus* sent me by Mr. Reitter, strongly resemble the latter but bear no likeness at all to *niger; quadratus* is, however, not the same as *punctulatus*, having the male impressions of the venter very much deeper and differing besides in its denser sculpture, smaller eyes, more circularly rounded base of the head and other characters. In this supplement No. 2512 (*punctulatus* Lec.) is said to be the same as the European *terminatus* Grav. I do not have *terminatus* before me at present, but the chances are very greatly against the accuracy of any such identification.

Deratopeus n. gen.

The species of this genus greatly resemble *Tetartopeus*, differing principally in the form of the gular sutures and rather shorter and stouter palpi and tarsi, small size, more slender form and some other structural features. They are few in number at present, those in my cabinet being readily separable by the following characters — taken in both instances from the male: —

Body deep black throughout, the elytra testaceous in apical fifth or sixth, somewhat more broadly toward the sides; legs pale ferruginous, the antennae blackish, slightly paler at tip and notably so toward base; head small, longer than wide, parallel and nearly straight at the sides to the broadly rounded basal angles, the base arcuato-truncate; eyes moderately small; antennae rather thick but filiform, as long as the head and prothorax, the medial joints barely one-half longer than wide, the punctures strong but very sparse; prothorax distinctly elongate, much wider than the head, the sides very feebly converging and nearly straight, the punctures coarse, deep and sparse; elytra quadrate, parallel, a third

wider than the prothorax but only very slightly longer, strongly though not very coarsely, moderately sparsely punctate, distinctly impressed along the suture; abdomen parallel, straight at the sides, distinctly narrower than the elytra. Male with the third and fourth ventrals just visibly impressed along the middle; fifth with a very deep elongate-oval, glabrous impression, not attaining the base, the apex feebly sinuate at the middle; sixth not impressed, transversely, rectilinearly truncate at tip, with a small and acutely triangular notch, only slightly deeper than wide and an eighth or ninth as wide as the apex; female not at hand. Length 4.0 mm.; width 0.8 mm. Massachusetts (Lowell), — Mr. F. Blanchard; [Florida — LeConte] ..... **nitidulus** Lec.

Body colored as in the preceding, the elytra pale testaceous throughout, except a piceous-black cloud toward the suture and not quite extending to the apex; head nearly as in *nitidulus* throughout, the antennae more slender, with the medial joints fully one-half longer than wide; prothorax but slightly elongate, much wider than the head, a little broader and shorter than in the preceding species, parallel and feebly arcuate at the sides, the strong punctures rather less sparse; elytra small and depressed, not as long as wide, very slightly wider than the prothorax and much shorter, the sides diverging from the base, the punctures rather fine but strong, somewhat sparse; abdomen parallel and straight at the sides, fully as wide as the elytral apex, dull in lustre and densely punctulate as in the preceding species. Male with the third ventral unmodified, the fourth very feebly impressed near the apex only, the fifth with a small and very deep subglabrous pit, rounded in outline, extending from a little before the middle to the apex, the latter feebly sinuato-truncate; sixth with an acutely angulate triangular incisure, deeper than wide, larger and deeper than in *nitidulus* and a seventh or eighth as wide as the apex, the latter anteriorly and outwardly truncate at each side; female not known. Length 4.5 mm.; width 0.75 mm. Massachusetts (Lowell), — Mr. Blanchard ..... **parvipennis** n. sp.

The difference in general facies between the large-winged and short-winged species in all these genera of the Lathrobia being so pronounced, with most other characters so similar, has suggested the presence of dimorphism, but I have been unable to prove this in any one instance, and, indeed, the only useful evidence will be that gained by actual observation of the life history of the species. The normal sexual differences in the elytra are not great, although nearly always observable, the elytra of the female being a little larger than those of the male, but, as can be seen in this genus, as well as in *Tetartopeus lacustris*, the presence of short winged forms, if not indicative of specific difference, must be due to perfectly asexual dimorphism, — a matter impossible to prove without careful biological study.

Eulathrobium n. gen.

We begin here a series of genera differing radically from those which precede in having a strong cariniform line on the flanks of the elytra, parallel to and not far from the lower edge. This very important character has been referred to previously by several authors, notably Dr. Sharp, in expounding the Amazonian and Mexican Paederini, but I am not aware that it has been employed hitherto in defining genera. The genera without this line are more boreal in habitat and equally characteristic of the old and new world subarctic faunas, but those possessing the line are more southern in habitat, as a rule, and probably originated in America; only one genus — *Lobrathium* Rey, — is common to the nearctic and palaearctic regions of the globe, and this is more northern in its range than any other, probably crossing from America to Asia by way of Bering Strait. The genus *Eulathrobium* consists at present of a single species, one of the largest and finest of our Lathrobia; it may be described as follows:—

Form broad, parallel and somewhat feebly convex, deep black throughout the legs dark brownish-rufous, the antennae and palpi black, with the joints rufous at base; lustre shining; head well developed, wider than long, broadly arcuato-truncate at base, the angles very broadly rounded, the sides becoming parallel and broadly arcuate behind the eyes, which are moderately large, the punctures rather coarse and close-set throughout, excepting a small smooth area on the vertex; antennae filiform, moderately stout, about as long as the head and prothorax, the medial joints three-fourths longer than wide, obconic, a little shorter in the female; prothorax not quite as wide as the head and only very slightly longer than wide, broadly suboval, the sides feebly converging and arcuate posteriorly from the very broadly rounded and obsolete apical angles, the punctures coarse, deep and not very sparse, the median smooth line distinct, narrow, not defined by series; elytra large, quadrate, parallel, distinctly wider than the head especially in the female, about a third wider than the prothorax and a fourth longer in the male, nearly a third longer than the prothorax in the female, the punctures moderately coarse, strong, unusually close-set and arranged without trace of order, the surface shining; abdomen parallel and straight at the sides, but little narrower than the elytra, finely, rather closely punctured but somewhat shining; legs rather long, only moderately stout. Male with the fifth ventral somewhat broadly and feebly

flattened along the middle throughout, the apex truncate; sixth unimpressed, the apex broadly sinuato-truncate, with a small, broadly triangular tooth projecting from the middle; female as large as the male but rather less stout, the sixth ventral with a very short arcuato-truncate lobe at tip, the surface not at all impressed. Length 11.0 mm.; width 1.8 mm. Rhode Island (Boston Neck), New Jersey, Pennsylvania and Michigan (Port Huron).....**grande** Lec.

This species is not the longest but is by far the stoutest Lathrobiid known to me; it has rather an extended range and is not rare.

Lathrotropis n. gen.

This genus is probably peculiar to the true Pacific coast fauna, representing there the eastern *Eulathrobium*, the species resembling *grande* in their broadly rounded angles of the head and prothorax and close-set coarse punctures, but differing in their smaller size and much more slender and generally more convex form; they also have the basal joint of the hind tarsi longer, although distinctly shorter than the second, and the antennae stouter. The species are moderately numerous and generally abundant in individuals, those before me being characterized as follows: —

Head moderate in size, always narrower than the elytra; elytral punctures usually irregular in arrangement..... 2

Head large, equal in width to the elytra or wider; species smaller in size, the elytral punctures always serial in arrangement..... 5

2 — Head extremely densely, moderately coarsely punctured and dull. Body large in size, rather stout, parallel, very dark rufo-piceous in color throughout, the antennae fuscous, the legs paler, rufous; head but little longer than wide, slightly narrower than the elytra, more distinctly in the female, the sides parallel and straight for some distance behind the eyes, which are moderate in size, rather convex and prominent and between two and three times their own length from the base; angles very broadly rounded, the base arcuato-truncate; antennae very stout, nearly as long as the head and prothorax, gradually incrassate distally, the medial joints about one-half longer than wide in the male; prothorax elongate-oval, much narrower than the head, moderately coarsely, somewhat closely punctured, the median smooth line distinct but not more elevated and not defined by punctured series; elytra longer than wide, parallel, about a third wider and a fourth longer than the prothorax, coarsely, deeply and very closely punctate, the punctures without trace of serial order; abdomen parallel, distinctly narrower than the elytra, the segments strongly impressed at base, finely, closely punctate and but feebly shining. Male with a small feeble rounded impression at

the apex of the fifth ventral, the apex broadly and feebly sinuato-truncate; sixth segment with a large triangular emargination at tip, generally not quite a third as wide as the apex and nearly as deep as wide, the surface narrowly elevated along the median line toward the notch, the ridge clothed with short stiff black spicules, some of the latter also present at the apices of the segment at each side of the notch; female with the sixth ventral not lobed, broadly rounded at tip and unimpressed. Length 8.0–9.0 mm.; width 1.1–1.3 mm. California (Sta. Clara to Humboldt). [= *lecontei* Duviv.].....**puncticeps** Lec.

Head less densely punctate, the interspaces always shining, the surface not dull in lustre..... 3

3 — Head densely dull beneath, the micro-reticulation very strong. Body smaller, rather stout, parallel, colored as in *puncticeps;* head well developed, not very greatly though distinctly narrower than the elytra, somewhat swollen toward base, the sides straight for some distance behind the moderately small and rather prominent eyes, the angles very broadly rounded, the base broadly rounded and feebly subtruncate, the punctures coarse and rather close-set; antennae very stout, not as long as the head and prothorax, the medial joints about a fourth longer than wide; prothorax rather small, elongate-oval, much narrower than the head, rather coarsely and closely punctate, the smooth median line wide and distinct; elytra parallel, slightly elongate, two-fifths wider and a third longer than the prothorax, coarsely closely and irregularly punctate; abdomen parallel, distinctly narrower than the elytra, finely, rather densely punctulate and somewhat dull. Male with a small and very faint oval impression at the apex of the fifth ventral, the sixth with a broadly parabolic, shallow, gradually formed apical sinus, about a third as wide as the segment, and six times as wide as deep, the surface adjoining extremely feebly impressed, the impression having a small patch of black spicules anteriorly; female unknown. Length 7.2 mm.; width 1.15 mm. California, (Sta. Ana Cañon), — Mr. Wickham.....**relicta** n. sp.

Head shining beneath, the micro-reticulation feeble..... 4

4 — Elytral punctures confused in arrangement, except toward base, where they become unevenly serial. Body moderately stout, piceous-black, the elytra dark rufous, the abdomen deep black; legs ferruginous, the antennae dusky; head but little longer than wide, the sides parallel and straight for a short distance behind the eyes, the angles very broadly rounded thence to the neck, the punctures coarse, deep, separated by more than their own diameters, the vertex impunctate in the middle; antennae stout, the medial joints much longer than the subapical; prothorax elongate-oval, much narrower than the head, coarsely, rather sparsely punctate; elytra distinctly elongate, parallel, coarsely and rather closely punctate, about two-fifths wider and a fourth longer than the prothorax; abdomen finely, closely punctulate, narrower than the elytra. Male with a small unimpressed glabrous area at the middle at apex of the fifth ventral, the sixth with a triangular impression, the apex broadly, parabolically sinuate; female with the sixth ventral obtusely rounded at tip, not lobed or impressed. Length 6.3–8.5 mm.; width 1.0–1.35 mm. California (San Diego to Humboldt) and Nevada (Reno)..... **jacobina** Lec.

Elytral punctures distinctly, though somewhat unevenly, serial in arrangement throughout. Body similar in form and coloration to the preceding but smaller in size and more coarsely and closely sculptured; head well developed, parallel at the sides, the angles very broadly rounded to the neck; eyes unusually small, at more than three times their own length from the base; punctures very coarse and close-set, becoming somewhat sparser on the vertex; antennae less stout than usual, very feebly incrassate distally, the medial joints equal in length to the subapical; prothorax narrow and strongly elongate-oval, much narrower than the head, coarsely and rather closely punctured; elytra much elongated, parallel, two-fifths wider and a third longer than the prothorax, very coarsely but not so closely punctate; abdomen slightly narrower than the elytra, less finely and rather closely punctate, somewhat shining. Male with a small oval glabrous pit on the median line at apex of the fifth ventral, the sixth with a small shallow, broadly rounded sinus at apex, the adjoining surface very feebly, triangularly impressed and with short black spiculiform hairs as in the preceding species; female with the sixth ventral very broadly, obtusely rounded at tip. Length 6.7–7.5 mm.; width 1.05 mm. California (Hoopa Valley, — Humboldt Co.) ..... **gnoma** n. sp.

5 — Head equal in width to the elytra. Body rather stout, parallel, convex, shining, pale testaceous in color throughout, the legs and antennae concolorous — probably immature; head well developed, the sides parallel, broadly, evenly rounded at base to the neck; eyes rather small, at more than three times their own length from the base; punctures notably coarse but well separated throughout; antennae not very stout, rather short, the median joints but little longer than wide in the female; prothorax oblong, slightly longer than wide, much narrower than the head, the sides parallel and straight in the middle, the angles broadly rounded, the anterior much more broadly than the posterior, the punctures similar to those of the head, coarse and rather widely separated, the median smooth line wide; elytra quadrate, parallel, barely as long as wide, equal in length to the prothorax and a third wider, the punctures very coarse, not close-set, arranged in rather uneven series throughout; abdomen parallel, fully as wide as the elytra, rather finely but not very closely punctate, shining. Male unknown; female with the sixth ventral broadly rounded at tip. Length 6.0 mm.; width 1.0 mm. California (Lake Co.) **validiceps** n. sp.

Head wider than the elytra; body more slender; elytra shorter than the prothorax except in *subseriata*. 6

6 — Form moderately slender, dark rufo-piceous, the elytra and legs brighter rufous, the abdomen black, the antennae infuscate; head oval, somewhat longer than wide, parallel, the basal angles very broadly rounded to the neck; eyes rather small; antennae stout, distinctly incrassate distally, the medial joints about a third longer than wide, the punctures coarse and deep but well separated; prothorax narrow, elongate-oval, very much narrower than the head, the anterior angles very broadly rounded and wholly obsolete, the punctures coarse, deep and rather close-set; elytra parallel, slightly longer than wide, about a fifth wider than the prothorax and equal in length to the latter, the

punctures only moderately coarse, uneven and very obscurely lineate in arrangement; abdomen fully as wide as the elytra, parallel, somewhat finely but not closely punctate and shining. Male with a deep narrow impression in apical half of the median line of the fifth ventral, the sixth with a broad shallow apical sinus and adjoining triangular impression, the latter with short spiculose hairs much as in *jacobina* and allied species; female not at hand. Length 6.0 mm.; width 0.85 mm. Vancouver Island..... **subseriata** Lec.

Form more slender and elongate and rather more depressed, the entire body and legs bright testaceous, the abdomen piceous-black, the antennae fuscous; head oblong, somewhat longer than wide, the sides parallel and feebly arcuate, the basal angles moderately broadly rounded to the neck; eyes unusually small, anterior; punctures moderately coarse, deep, well separated; antennae moderately stout, very distinctly incrassate distally; prothorax narrow, much elongated, very much narrower than the head, the sides subparallel, the apical angles less broadly rounded and obliterated than in *subseriata*, the punctures coarse and rather sparse; elytra parallel, somewhat longer than wide, about a fifth wider than the prothorax and slightly, though obviously, shorter, the punctures coarse, uneven and close-set, arranged in very uneven series; abdomen as wide as the elytra, finely, rather closely punctate and only feebly shining. Male with a rather larger rounded impressed and glabrous pit in apical half of the fifth ventral, the sixth very nearly as in *subseriata* and other species; female unknown. Length 6.7 mm.; width 0.8 mm. California (San Francisco)..... **vafra** n. sp.

Form very slender, smaller in size, dark piceo-rufous, the elytra and legs rather brighter rufous, the abdomen more blackish; head subquadrate, about as wide as long, the sides parallel and nearly straight; basal angles broadly rounded to the neck; eyes small and but slightly convex; punctures moderately coarse, rather close-set toward the sides and base; antennae very stout, distinctly incrassate distally, the medial joints but slightly longer than wide in the female; prothorax very much narrower than the head, elongate-oval, the sides straight in the middle, the anterior angles very broadly rounded and obliterated, the punctures coarse but well separated; elytra parallel, rather longer than wide, about a fourth wider and slightly, though obviously, shorter than the prothorax, the punctures moderately coarse, deep, close-set and arranged in even and broadly impressed series, becoming confused toward the inner apical angles; abdomen as wide as the elytra, finely, not densely punctate and rather shining. Male unknown; female with the sixth ventral evenly rounded behind, not lobed. Length 6.0 mm.; width 0.77 mm. British Columbia..... **ustulata** n. sp.

The species described by Le Conte under the name *jacobina*, is the commonest Lathrobiid in California, occurring abundantly almost everywhere and varying greatly in size; one specimen was given me by Mr. Jülich, who stated that he took it near New York City; further questioning failed to

shake the positiveness of Mr. Jülich that he himself had captured it and was confident of the locality. In a similar case a specimen of *gnoma* was sent to me many years ago by a correspondent, who stated that he had collected it at Keokuk, in Iowa. Having no reason to doubt the accuracy of either of these assertions, we must conclude that the species mentioned, as well as many other California beetles, are annually transported across the continent in earth about the roots of plants, in straw, among packed fruit or in other ways, but fail to establish themselves in the east because of the cold winters. *Ustulata* differs from *subseriata* in its more slender form and shorter elytra, with the punctures more evenly serial; as the elytra of the male are shorter than those of the female, upon which sex *ustulata* is founded, the abbreviation of the elytra in the male must be still more notable when compared with the male of *subseriata*. *Puncticeps* Lec. belongs to a very different genus from *puncticeps* Sharp, and the change of name of the former to *lecontei* by Duvivier (Cat., 1883), is not necessary.

Lobrathium Rey.

This genus and the two preceding form a rather natural group, having the basal angles of the head and the anterior angles of the prothorax very broadly rounded or obliterated. In the present genus the gular sutures differ more than is usually the case from species to species, but, although sometimes almost straight and approaching each other gradually posteriorly, they always diverge before attaining the base and are usually most approximate just behind the middle. The species are smaller, more depressed and with longer antennae than in the preceding genus, with the punctures less coarse as a rule, those of the pronotum being generally rather dense, in such manner that the smooth median line seems to be somewhat elevated or more convex than the rest of the surface. *Lobrathium* is more boreal than any of our other genera having an epipleural fold and is doubtless well represented in the great Canadian northwest, as well as in

northern Asia and Europe; it descends along the mountains in America as far south as Colorado. It is not at all closely related to *Lathrotaxis*, which follows, although classified under the same head in the table on account of the form of the gular sutures, but, as before stated, belongs with *Lathrotropis* and *Eulathrobium*. The few species thus far brought to light within our territories may be briefly described as follows: —

Body broader and stouter, the prothorax but slightly elongate; pale rufotestaceous throughout, the antennae and abdomen dusky; head large, fully as wide as long, parallel and nearly straight at the sides, the base broadly arcuato-truncate, the angles moderately broadly rounded; eyes moderate, the punctures rather small and close-set, sparse on the vertex; antennae but little longer than the head and prothorax, rather slender, the medial joints decidedly longer than the subapical and fully twice as long as wide; prothorax distinctly narrower than the head, widest anteriorly, the sides distinctly converging to the base and nearly straight, a fourth or fifth longer than wide, the anterior angles moderately broadly rounded, the punctures rather small but deep, irregular, close-set near the subelevated median line, the latter narrowly impressed behind the middle for a short distance; elytra slightly elongate, as wide as the head, subparallel with the sides feebly arcuate, scarcely longer than the prothorax and about a fourth wider, coarsely, very closely and sublinearly punctate; abdomen parallel, about as wide as the elytra, finely, closely punctate. Male with ventrals two to five strongly, not very broadly impressed along the median line throughout, the fifth with a broadly rounded shallow sinus as wide as the attendant impression; sixth broadly impressed throughout in median third in continuation of the preceding impressions, the apex with a narrower and abruptly formed sinus nearly as deep as wide and widely rounded at the bottom; impression anteriorly with a large patch of short black spiculiform hairs narrowly divided along the middle; female unknown. Length 7.0 mm.; width 1.1 mm. Washington State (Thurston Co.) ..... **tacomae** n. sp.

Body narrow and slender, the prothorax narrow and notably elongate; medial joints of the antennae about equal in length to the subapical and much less than twice as long as wide..... 2

2 — Sides of the prothorax feebly converging from apex to base, broadly and almost evenly arcuate throughout; dark fusco-testaceous, the elytra flavo-testaceous, gradually blackish-piceous in basal half; abdomen piceous-black, the legs dark ferruginous, the antennae dusky, longer than the head and prothorax, rather stout, feebly incrassate distally; head rather longer than wide, parallel and broadly arcuate at the sides, the base broadly arcuato-truncate, somewhat wider than the elytra, with the basal angles moderately broadly rounded, the punctures rather fine but deep and close-set toward the sides and base; prothorax much narrower than the head, a third longer than wide, the apical angles

moderately broadly rounded, the basal very small, the punctures rather fine but deep, unevenly disposed, dense internally, the median line not elevated; elytra much elongated, subparallel, a fourth wider and a fifth longer than the prothorax, coarsely, closely, very unevenly and subrugosely punctured, generally with feebly sublineate arrangement, especially toward base; abdomen parallel, as wide as the elytra, finely, rather closely punctulate and feebly shining. Male unknown; female with the sixth ventral pale in color and broadly rounded at tip. Length 5.8 mm.; width 0.9 mm. Montana (Kalispell), — Mr. Wickham..... **montanicum** n. sp.

Sides of the prothorax broadly and evenly rounded anteriorly, thence distinctly converging and nearly straight to the base..... 3

3 — Body and legs rufo-testaceous in color, the elytra faintly darker in basal half, the abdomen piceous-black, the antennae dusky; head slightly elongate, the sides parallel and feebly arcuate; base truncate, the angles moderately rounded, the punctures fine but strong, close-set, nearly wanting at the middle of the vertex; antennae rather thick, much longer than the head and prothorax, distinctly incrassate distally; prothorax small, much narrower than the head, fully a third longer than wide, not very coarsely but deeply and closely punctate, the median smooth line well defined and somewhat elevated; elytra rather small, slightly elongate, subparallel and feebly arcuate at the sides, about equal in length to the prothorax in both sexes and a third or fourth wider, coarsely, closely, unevenly and subrugosely punctate; abdomen as wide as the elytra, finely but rather strongly, moderately closely punctulate and somewhat shining. Male with ventrals two to four wholly unmodified, the fifth narrowly and just visibly flattened along the middle, the apex broadly sinuato-truncate; sixth with a feeble parallel and slightly oval impression, a third as wide as the segment and extending throughout the length, the bottom densely covered with short black spiculiform hairs which are slightly parted along the middle, the apex with a small abruptly formed, circularly rounded sinus, a third as wide as the apex and nearly twice as wide as deep; female with the sixth ventral more convex, broadly rounded at tip. Length 5.5–6.0 mm.; width 0.8 mm. Colorado (Ouray — 7500 feet elevation), — Mr. Wickham ..... **coloradense** n. sp.

Body dark rufo-piceous in color, the elytra bright rufous in apical half, the abdomen black; legs and antennae rather pale, rufous; head not quite as wide as the elytra in the female, with the antennae stout, longer than the head and prothorax and evidently incrassate distally; sides parallel and feebly arcuate, the base subtruncate, the angles broadly rounded; eyes at two and one-half times their own length from the base; punctures rather small, deep and close-set, sparse on the vertex; prothorax small, much narrower than the head, nearly a third longer than wide, less finely but deeply and densely punctate, especially toward the smooth median line, which appears to be slightly elevated; elytra but slightly longer than wide, the sides parallel and feebly arcuate, two-fifths wider than the prothorax but only very slightly longer, the punctures only moderately coarse and not very close-set but uneven, subrugose and much confused; abdomen not quite as wide as the

elytra, finely, closely punctate and slightly shining. Male unknown; female with the sixth ventral abruptly pale in color, more convex and broadly rounded at tip. Length 5.6 mm.; width 0.8 mm. Washington State..... **bipartitum** n. sp.

European species, such as *bicolor* Er. and *picipes* Er., have the head much more rounded at base, the eyes smaller and the antennae very much more slender and elongate than any of these American forms, and it is possible that the latter may be generically or subgenerically separated at some time in the future; at present they seem most fittingly placed in *Lobrathium*, which is not by any means a subgenus of *Lathrobium*.

Lathrotaxis n. gen.

The species of this genus are of larger size than any of those which follow in the Lathrobia, comparing well in stature with the less numerous and far more localized *Lathrotropis*. The body is parallel and rather depressed, the coarse punctures always very sparse, except on the abdomen, where they are fine and close-set but not so dense as to give the dull and lustreless appearance characterizing most of the subsequent genera and resembling *Linolathra* more in this respect. The strongly marked anterior angles of the prothorax, in connection with the broad depressed form, shining surface and sparse, coarse sculpture, give to the members of *Lathrotaxis* a peculiar and pronounced habitus, differing greatly from the three genera immediately preceding but imitated in the minute forms constituting the genera *Pseudolathra*, *Linolathra* and others of this group. The thirteen species in my cabinet are distributed over the entire region north of Mexico and below the Canadian boundary, but are notably more abundant in the south and represented by only one or two species in the northeastern states, where *Lathrobium* and *Lathrobioma* are so abundant; they may be readily identified by the following outline descriptions: —

Body black or piceous-black, with the elytra and sometimes also the prothorax, paler..... 2
Body black throughout..... 11

2 — Head widest near the base, the sides diverging posteriorly from the eyes. Body very large in size, polished, black, the elytra bright rufous, with a black scutellar cloud, the abdomen toward tip, legs and antennae pale ferruginous; head large, rather wider than long, very coarsely and sparsely punctate, the sides broadly arcuate; angles rather narrowly rounded, the base broadly arcuato-truncate; eyes moderate; antennae long and slender, filiform, not at all incrassate distally, longer than the head and prothorax, the medial joints more than twice as long as wide and much longer than the subapical; prothorax only very slightly longer than wide and somewhat wider than the head, strongly obtrapezoidal, the sides straight; punctures rather coarse, very sparse, irregular, excepting a single close-set series at each side of the broad median smooth line; elytra quadrate, parallel, very slightly wider and longer than the prothorax, the punctures rather fine and arranged in uneven series; abdomen narrower than the elytra, shining. Male with the surface of the fifth and sixth ventrals wholly unmodified, the apex of the former with a broad and very shallow cuspidiform emargination, the latter with a large triangular apical notch but little wider than deep, one-half as wide as the apex, with its anterior angle slightly blunt; female unknown. Length 10.4 mm.; width 1.4 mm. Arizona (Williams), — Mr. Wickham..... **centurio** n. sp.

Head parallel at the sides..... 3

3 — Head and prothorax black or blackish, always darker than the elytra. 4

Head black, the prothorax rufous and concolorous with the elytra..... 7

Head and prothorax rufous and concolorous with the elytra.....10

4 — Abdomen not rufous at tip..... 5

Abdomen distinctly rufous at tip..... 6

5 — Body polished, black, the prothorax slightly picescent, the elytra dark though clear rufous, with a feeble piceous scutellar cloud; legs and antennae ferruginous; head subquadrate, as long as wide, the sides straight, the angles rounded for a short distance to the neck, which is three-fourths as wide as the head, the punctures coarse, uneven in size as usual and very sparse; antennae a little longer than the head and prothorax, moderately slender, feebly incrassate distally, the medial joints barely twice as long as wide and shorter than the subapical; prothorax oblong, only slightly longer than wide, slightly wider than the head, the sides straight and only just visibly converging throughout, the punctures moderately coarse, very sparse and irregularly distributed, the median smooth line bounded by a narrow closer aggregation of punctures, not regularly serial; elytra quadrate or slightly elongate, parallel, slightly longer than the prothorax and about a fourth wider, the punctures only moderately coarse but strong, arranged in regular and feebly impressed series; abdomen slightly narrower than the elytra. Male with the fifth ventral gradually, very feebly sinuate at the middle of the apex, the adjoining surface glabrous and shining but not impressed, the sixth with a broad shallow, gradually formed, broadly rounded sinus, about two-fifths as wide as the apex and six or seven times as wide as deep, the surface with a large median patch of dense and slightly stouter black hairs; female with the sixth ventral abruptly

much narrower than the preceding, rounded at tip. Length 7.5 mm.; width 1.18 mm. New York to Iowa and Texas (Galveston).

longiuscula Grav.

6 — Form rather stout, polished, black, the rufous elytra with a black basal cloud, the legs and antennae pale; head quadrate, as long as wide, the sides straight; angles moderately rounded, the neck very wide as usual, the punctures coarse, very sparse; antennae long and rather stout, much longer than the head and prothorax, feebly incrassate distally, the medial joints rather more than twice as long as wide and longer than the subapical; prothorax nearly as in *longiuscula*, a little longer than wide, the sides more converging from apex to base, just visibly wider than the head, the punctures somewhat coarser and still sparser; elytra elongate, parallel, a fourth wider and longer than the prothorax, the punctures moderate, impressed, arranged in regular, scarcely impressed series, except near apex, where they are finer and confused; abdomen but little narrower than the elytra, finely, closely punctulate. Male with the fifth and sixth ventrals wholly unmodified on the surface, the former with a small shallow and gradually formed median sinus at apex, the emargination in the form of a feeble cusp with broadly rounded point, the sixth with a very large subcircularly rounded emargination, occupying the entire apex and fully twice as wide as deep. Length 7.0 mm.; width 1.27 mm. Texas..... **soror** n. sp.

Form more slender, the elytra bright red, without a distinct basal cloud, the legs pale, the antennae slightly infuscate; head as in *soror* but smaller, the antennae rather thick, scarcely as long as the head and prothorax, barely at all incrassate distally, the medial joints about two-thirds longer than wide and longer than the subapical; prothorax rather distinctly elongate, equal in width to the head, slightly narrowed posteriorly, the sides nearly straight; basal angles more broadly rounded than the apical as usual, the punctures not coarse but deep, distinct, irregularly and sparsely distributed, more closely aggregated along the median smooth line; elytra parallel, but little longer than wide, very slightly longer than the prothorax and about a fifth wider, the punctures small and very feebly impressed, arranged serially, except toward apex, where they are broadly confused and still smaller; abdomen much narrower than the elytra, finely and not very closely punctate. Male with the fifth ventral broadly, subconically impressed in apical two-thirds, the impression clothed with short coarse black hairs extending obliquely outward from the glabrous median line, the apical margin sinuate across the end of the impression, the sinus as wide as the latter, evenly, circularly rounded and very shallow; sixth with a very deep and acutely ogival incisure, twice as deep as wide, the notch abruptly formed, with its opening two-fifths as wide as the apex, the surface not modified. Length 7.8 mm.; width 1.12 mm. Texas (Austin and Waco)..... **fallaciosa** n. sp. (Fvl. MS.)

7 — Abdomen not rufous at tip. Body moderately large and unusually stout, the head and abdomen black, the remainder, including the legs, pale and rufous; antennae ferruginous; head moderate, subquadrate, the angles rounded as usual, not very coarsely, rather feebly and very sparsely punctate; antennae well developed, longer than the head and

prothorax, rather stout, feebly incrassate distally, the medial joints somewhat more than twice as long as wide and distinctly longer than the subapical; prothorax rather distinctly wider than the head, but little longer than wide, obtrapezoidal, the sides strongly converging and straight, the punctures small, very sparse and unevenly disposed, subserial along the smooth line; elytra slightly elongate, large, parallel, a fourth wider and longer than the prothorax, the punctures fine, very feeble, arranged in wholly unimpressed and somewhat regular series, except toward apex; abdomen distinctly narrower than the elytra, finely, closely punctulate. Male with the fifth and sixth ventrals wholly unmodified on the surface, the former scarcely visibly sinuato-truncate toward the middle at apex, the latter with a gradually formed sinus, slightly wider than deep, one-third as wide as the apex, the emargination broadly rounded at the bottom, with its sides at first feebly diverging posteriorly. Length 8.0 mm.; width 1.28 mm. Arizona (Winslow), — Mr. Wickham.

praeceps n. sp.

Abdomen rufous at tip.....8

8 — Antennae shorter, the medial joints but slightly elongated. Body small and unusually slender, parallel, rufous in color, the head and abdomen — except toward tip — black, the legs and antennae pale testaceous; head rather longer than wide, coarsely, very sparsely punctate, the sides nearly straight and just visibly converging from the eyes to the broadly rounded basal angles; eyes well developed, at about one-half more than their own length from the base; antennae moderately thick, scarcely as long as the head and prothorax, but slightly incrassate distally, the medial joints scarcely one-half longer than wide, longer than the subapical; prothorax only very slightly longer than wide, just visibly wider than the head, the sides parallel and very feebly arcuate, the basal angles broadly rounded, the apical not at all rounded; punctures coarse and irregular along the smooth median line, small and very sparse elsewhere; elytra slightly elongate, parallel, a fifth wider and a fourth longer than the prothorax, the punctures coarse, arranged in regular and broadly impressed series; abdomen decidedly narrower than the elytra, minutely and rather sparsely punctulate. Male unknown; female with the sixth ventral narrow, evenly rounded at tip. Length 6.4 mm.; width 0.95 mm. New Mexico (Albuquerque).

angusta n. sp.

Antennae more elongate, longer than the head and prothorax, very feebly incrassate distally, with the medial joints almost twice as long as wide.....9

9 — Form somewhat stout, rather dark rufo-testaceous throughout, the head piceous-black, the abdomen — except toward tip — black; head fully as long as wide, coarsely, very sparsely punctate, subimpunctate toward the middle as usual, the sides straight and parallel, the angles well rounded; eyes at three-fourths more than their own length from the base; prothorax distinctly wider than the head, but little longer than wide, the sides parallel and nearly straight, rounding toward base, the punctures rather coarse and very sparse throughout but serial and close-set along the median smooth space; elytra but slightly longer than wide, parallel, a fifth wider and a fourth longer than the pro-

thorax, the punctures coarse, arranged in scarcely impressed regular series; abdomen but slightly narrower than the elytra, finely, rather closely punctulate. Male with the surface of the fifth and sixth ventrals wholly unmodified, the apex of the former broadly, very feebly sinuate toward the middle; sixth with a broadly rounded, shallow, gradually formed parabolic sinus, half as wide as the apex and about four times as wide as deep; female not differing greatly, the antennae nearly similar in structure. Length 7.3 mm.; width 1.22 mm. Texas (El Paso),—Mr. G. W. Dunn — and New Mexico..... ...**acomana** n. sp.

Form rather less stout and more elongate, similar in coloration, the testaceous parts brighter; head similar, the eyes a little larger, at barely one-half more than their own length from the base; prothorax narrower and more elongate, nearly a fifth longer than wide, not evidently wider than the head, the sides straight and parallel, the basal angles broadly rounded, the anterior right, scarcely more than blunt, the punctures only moderately coarse, feeble and very sparse, larger and closer but confused along the median smooth space; elytra distinctly elongate, parallel, a fifth wider and almost a fourth longer than the prothorax, the punctures rather small, impressed, arranged in regular and broadly impressed lines, except toward apex, where they are confused; abdomen somewhat narrower than the elytra, the punctures minute and not very close-set. Male with sexual characters similar to the preceding, the fifth ventral feebly sinuato-truncate throughout the width, the sinus of the sixth similar in form, three-fifths as wide as the apex. Length 7.5 mm.; width 1.15 mm. Montana (western), Utah (Provo) and Arizona (Winslow and East Bridge), — Mr. Wickham.....**rubricollis** n. sp.

10 — Body rather stout, parallel and less depressed than usual, moderately convex, shining, rufo-testaceous, the legs and antennae concolorous, the abdomen uniform in color throughout and rather pale piceo-rufous; head as wide as long, parallel and straight at the sides, the angles well rounded, the punctures coarse and rather close-set, the eyes unusually small, at much more than twice their own length from the base; antennae fully as long as the head and prothorax, moderately slender, very gradually and strongly incrassate distally, the medial joints two-thirds longer than wide; prothorax oblong, distinctly elongate, not quite as wide as the head, the sides subparallel and nearly straight, broadly rounding toward base, the punctures rather coarse and only moderately sparse, slightly more aggregated narrowly along the median smooth space; elytra but little longer than wide, parallel, about a fifth wider and longer than the prothorax, somewhat wider than the head, the punctures rather coarse, only moderately sparse and very uneven, only partially arranged in uneven series; abdomen distinctly narrower than the elytra, the punctures much coarser than usual above and beneath and rather close-set. Male with the surface of the fifth and sixth ventrals wholly unmodified, except a narrow impunctate and glabrous unimpressed line along the middle of each throughout, the apex of the former broadly, very feebly sinuate toward the middle, the sixth with a deep angulate notch at apex, the notch with straight sides rounding outwardly toward tip, a little deeper than wide, half as wide as the

segmental apex and with its anterior angle narrowly rounded. Length 6.7 mm.; width 1.15 mm. Middle States.....**polita** Grav.

Body similar to the preceding but still stouter, parallel, scarcely so convex, bright rufo-testaceous throughout and shining, the abdomen blackish-piceous, paler and rufescent at apex; head similar but broader, the basal angles more broadly rounded, the eyes sensibly larger, at barely twice their own length from the base, the punctures almost as coarse but denser toward the sides and sparser medially, the antennae nearly similar but with the medial joints rather more elongate; prothorax smaller and shorter, distinctly narrower than the head, not obviously longer than wide, the sides feebly converging from apex to base and broadly arcuate throughout, the punctures moderately coarse and sparse, not more densely aggregated near the median smooth space; elytra rather more elongate, parallel, a fourth wider than the prothorax and nearly a third longer, less coarsely, rather more sparsely and still less serially punctured; abdomen broader, nearly as wide as the elytra, rather less coarsely but almost as closely punctulate. Male with the surface of the fifth and sixth ventrals nearly as in *polita*, having a narrow glabrous median line throughout, but the fifth is less distinctly sinuate toward the middle of the apex and the surface is feebly impressed along the glabrous area near the apex; the notch of the sixth is more equilateral, fully three-fifths as wide as the apex, distinctly wider than deep, with its anterior angle slightly blunt. Length 6.4 mm.; width 1.18 mm. Florida (Crescent City).....**floridae** n. sp.

11 — Body very depressed, the legs black with the tarsi paler; antennae very long and slender, with the medial joints much more than twice as long as wide; surface shining; head small, coarsely, very sparsely punctate laterally, broadly subimpunctate medially, rather wider than long, the sides nearly straight, feebly converging from the eyes to the basal angles, which are obtuse but only slightly rounded; eyes well developed; antennae black, almost half as long as the body, scarcely perceptibly incrassate toward tip; prothorax much wider than the head, only slightly longer than wide, the sides feebly converging from the apex and very slightly arcuate, broadly arcuate toward base, the punctures fine but distinct, very sparse, narrowly more aggregated along the median smooth line; elytra but little longer than wide, parallel, a third wider and longer than the prothorax, the punctures fine, rather sparse, partially serial in arrangement; abdomen distinctly narrower than the elytra, finely and closely punctulate. Male with the fifth ventral wholly unmodified, the apex rectilinearly truncate throughout, the sixth evenly and rather strongly rounded at tip, with a small triangular and rather abruptly formed emargination, about a sixth as wide as the base of the segment and rather deeper than wide, with its anterior angle slightly blunt, the surface with a narrow and simple glabrous cylindric impression along the median line throughout, the edges of the impression obtusely rounded; female with the sixth ventral broadly angulate at tip. Length 6.5 mm.; width 1.18 mm. California (Lake and Siskiyou Cos.).....**californica** Lec.

Body normally convex, the legs and antennae pale; antennae shorter, less slender and more incrassate, not longer than the head and prothorax,

with the medial joints less than twice as long as wide; lustre polished.....12

12—Form stouter; head well developed, fully as wide as long, the sides parallel and straight, the angles broadly rounded; eyes well developed, at less than twice their own length from the base, the punctures coarse, moderately sparse, wanting at the middle of the vertex; prothorax distinctly elongate, just visibly wider than the head, the sides parallel, nearly straight, the basal angles broadly rounded, the punctures only moderately coarse but less sparse than usual; elytra longer than wide, parallel, a fifth wider and barely a fourth longer than the prothorax, the punctures fine, arranged in rather regular and feebly impressed series almost throughout; abdomen distinctly narrower than the elytra, minutely, not very closely punctulate and somewhat shining. Male unknown; female with the sixth ventral conical, convex, rather narrowly but obtusely rounded at tip. Length 6.8 mm.; width 1.18 mm. California (Yuma).....**atronitens** n. sp.

Form somewhat more slender and elongate; head very nearly as long as wide, coarsely and sparsely punctate, the sides behind the eyes nearly straight and just visibly converging to the broadly rounded basal angles; eyes at one-half more than their own length from the base; antennae rather thick, not quite as long as the head and prothorax, the latter distinctly elongate, very slightly wider than the head, the sides subparallel and nearly straight, broadly rounding toward base, the punctures rather coarse, sparse, narrowly aggregated along the median smooth area; elytra unusually elongate, parallel, fully a fourth longer than wide, about a fourth or fifth wider and a third longer than the prothorax, the punctures rather small but distinct, arranged in regular and broadly impressed series nearly throughout; abdomen obviously narrower than the elytra, minutely and rather sparsely punctulate and shining, black above, the under surface feebly rufescent throughout. Male unknown; female with the sixth ventral rather broadly rounded at tip. Length 7.0 mm.; width 1.05 mm. Texas (Galveston).....**galvestonica** n. sp.

The representatives of more distinct structural types, among the species above described, are *californica*, which stands alone, *polita* and *floridae*, which form an isolated group, and *longiuscula* and all the other species, which form a natural aggregate, although, as may be inferred, there are marked differences in coloration. The sexual characters of *fallaciosa* are remarkably different from those of any other species, the contrast between the very narrow deep ogival notch of the sixth ventral in that species, and the large, broadly rounded emargination of the same segment characterizing *soror*, for example, being very remarkable. It is probable that the *Lathrobium seriatum*, of LeConte, previously referred to,

belongs to this genus, but it differs from any of the above forms in its more parallel sides, relatively smaller elytra and more converging sides of the head behind the eyes — among other characters. The Munich catalogue places *castanea* Grav., as a variety of *longiuscula*, but I have no means of confirming this at present.

Pseudolathra n. gen.

The two species at present comprising this genus are among the smallest known Lathrobiids; they have a peculiarly depressed form and extremely separated gular sutures, short hind tarsi, with the four basal joints very short and subequal, and other characters as stated in the table. They may be described as follows:—

Form slender, subparallel, shining, the abdomen dull and very densely punctulate; body pale rufo-testaceous, the head blackish-piceous, the elytra sometimes piceous near the scutellum, the abdomen blackish, gradually rufescent toward the tip, the legs and antennae pale; head rather small, not coarsely, very sparsely punctate, slightly wider than long, parallel and straight at the sides, arcuato-truncate at base throughout the width, the angles obtuse but only very slightly rounded; eyes rather well developed, somewhat prominent, at scarcely twice their own length from the base; antennae rather thick, feebly incrassate distally, nearly one-half as long as the body, the medial joints about one-half longer than wide; prothorax distinctly wider than the head in the male, less obviously so in the female, oblong, only slightly longer than wide, the sides distinctly converging from the strongly marked apical, to the broadly rounded basal, angles, and straight, the punctures fine and very sparse, except a close-set subimpressed series along the median smooth line, which are coarser; elytra slightly longer than wide, a fourth wider and a fifth longer than the prothorax, the sides straight and distinctly diverging throughout, the punctures rather sparse, fine, arranged in unimpressed series, confused toward tip; surface narrowly, deeply impressed along the sutural bead; abdomen nearly as wide as the elytra, minutely, very densely punctulate. Male with the fifth ventral unmodified, the sixth broadly rounded at tip, with a very shallow emargination in the form of a broad cusp, the adjacent surface with a small simple impression slightly longer than wide. Length 3.4 mm.; width 0.63 mm. Texas (Austin, Waco, Houston and Galveston), Louisiana (Morgan City) and Iowa. [=*Americana* Duviv.].....**analis** Lec.

Form and lustre somewhat similar to the preceding but larger, dark piceous in color, the head and abdomen black, the latter only feebly paler at the immediate tip; legs and antennae pale; head small, nearly as long

as wide, the sides parallel, the basal angles distinctly rounded; eyes larger, at one-half more than their own length from the base, the punctures relatively coarse and less sparse; antennae similar; prothorax distinctly more elongate, wider than the head, the sides more nearly parallel, straight, the punctures coarser, rather sparse, the medial series similarly impressed; elytra much larger, distinctly elongate, two-fifths wider and a third longer than the prothorax, the sides straight and feebly diverging, the punctures fine and feeble, more close-set, the series very uneven and ill-defined. Male with the surface of the fifth and sixth ventrals wholly unmodified throughout, the latter not impressed at tip, the apex rather narrow, with a gradually formed subtriangular sinus, one-fourth as wide as the tip, distinctly wider than deep, with the bottom angle obtuse. Length 3.8 mm.; width 0.7 mm. Mississippi (Vicksburg) and Indiana (Cab. Levette) ....**leviceps** n. sp.

The male of *analis*, from Morgan City, has the shallow cuspidiform emargination of the sixth ventral rather deeper, more abruptly formed or more triangular than the Texas males, and the eyes are a trifle smaller, but there are no other tangible differences.

Paralathra n. gen.

This genus is somewhat composite, for, with a general habitus which is not very distinctive and suggestive of *Lathrotaxis*, it has the gular sutures of *Lathrobiella* and the hind tarsi somewhat as in *Lathrotaxis*, from which it differs in in the form of the gular sutures, densely punctate and dull abdomen and narrower neck. The general surface is decidedly more convex than in *Pseudolathra*, the latter also having the gular sutures much more widely separated at base or more strongly divergent. I am compelled therefore to regard the single species as a distinct genus; it may be described as follows: —

Body rather stout, parallel, polished, the abdomen dull, pale and bright rufous in color, the head dark rufo-piceous, the abdomen infuscate, becoming rufescent at tip, the legs and antennae pale; head rather well developed, somewhat wider than long, parallel and nearly straight at the sides, truncate at base, with the angles distinctly rounded; eyes large and well developed but feebly convex, at about a third more than their own length from the base, the punctures extremely sparse, not very coarse; antennae nearly half as long as the body, slender, feebly incrassate distally, the medial joints not quite twice as long as wide;

prothorax very slightly wider than the head, but little longer than wide, the sides parallel and nearly straight, the apical and basal angles narrowly and subequally rounded, convex, the punctures fine, very sparse, coarser in a more close-set series along the median smooth line, the series wholly unimpressed; elytra slightly elongate, a fourth wider and longer than the prothorax, the sides just visibly diverging throughout and nearly straight, the punctures fine, rather sparse, arranged in somewhat close-set, broadly impressed series, except toward tip where all sculpture becomes very feeble; abdomen broad, as wide as the elytra. Male unknown; female with the sixth ventral narrow, evenly rounded at tip. Length 4.6 mm.; width 0.88 mm. Colorado (Greeley).
filicornis n. sp.

A single specimen only of this species was received from Mr. Wickham some years ago.

Linolathra n. gen.

The comparatively few known species of this genus have a very distinct habitus, due to their small size, narrow and rather convex parallel form, polished surface, with very coarse and sparse elytral punctures, and distinct but not close-set abdominal sculpture. They are strongly suggestive of *Dacnochilus* and are really much more closely related to that genus than to *Lathrotaxis* or *Lathrobiella*. The four species represented in my cabinet may be readily known as follows: —

Head and abdomen black..... 2
Head and abdomen pale in color..... 4
2 — Tip of the abdomen rufous. Body parallel; prothorax, elytra and legs pale and bright rufous, the elytra not definitely darker toward base; head scarcely as long as wide, the sides subparallel and feebly arcuate, the angles well rounded; base subtruncate, the neck scarcely half as wide as the head; eyes convex, at rather less than twice their own length from the base, the punctures somewhat coarse, very sparse; antennae moderately thick, very feebly incrassate, distinctly longer than the head and prothorax, the medial joints less than half longer than wide; prothorax small, slightly elongate, somewhat narrower than the head, the sides parallel and feebly arcuate; anterior angles distinct, the basal rounded, the punctures moderately coarse, forming one or two shorter curved lateral series and a well marked close series along the median impunctate area, the latter series impressed toward base; elytra quadrate, parallel, much wider than the head, a third wider and nearly a fourth longer than the prothorax, the punctures coarse, impressed, sparse, disposed in three or four series, the sutural being very widely separated from the next discal series; abdomen slender, much nar-

rower than the elytra, rather shining. Male with a small, abruptly formed, semicircular emargination at the apex of the fifth ventral, the notch fully twice as wide as deep and a tenth as wide as the apex, the adjacent surface glabrous, just visibly impressed along the middle for a short distance; sixth segment longitudinally impressed along the middle, the impression shallow but well defined, gradually narrowing anteriorly throughout and extending nearly to the base, the apex with a broadly rounded and gradually formed sinus, three-fifths as wide as the apex and four or five times as wide as deep. Length 5.0 mm.; width 0.7 mm. Texas (Austin and Del Rio) ..... **gaudens** n. sp.

Tip of the abdomen not paler 3

3 — Head less distinctly narrower than the elytra; antennae longer, thicker and distinctly incrassate distally. Body parallel, moderately slender, bright testaceous in color, the legs concolorous, the antennae infuscate except at base and apex; elytra abruptly black in basal three-fifths to half; head slightly wider than long, the sides parallel and feebly arcuate; base arcuato-truncate, the angles obtuse but scarcely rounded; eyes at nearly twice their own length from the base, the punctures very sparse; antennae unusually developed, thick, the median joints about one-half longer than wide, slightly longer than head and prothorax, the latter slightly elongate, parallel, distinctly narrower than the head, the anterior angles not rounded, the basal rather broadly; sides straight, the punctures fine, very sparse laterally, with a single slightly impressed series of larger punctures along the median smooth space; elytra scarcely longer than wide, a fourth wider and about a fifth longer than the prothorax, punctured nearly as in the preceding species but rather more closely and less coarsely; abdomen narrower than the elytra. Male with sexual characters as in *gaudens*, except that the emargination of the fifth ventral is still smaller, much more gradually formed and three or four times as wide as deep and with the entirely similar impression of the sixth shorter, coming far from attaining the segmental base. Length 4.6 mm.; width 0.7 mm. Texas (Columbus). [=*horni* Duviv.] ..... **dimidiata** Say

Head smaller, always very much narrower than the elytra; antennae thinner and only feebly incrassate, but as long as the head and prothorax. Body slightly more slender, nearly similar in coloration, except that the elytra are variable in ornamentation, some examples having a blackish though more or less medial cloud in almost basal half, others with the cloud almost obsolete; head fully as long as wide, rather coarsely but very sparsely punctate toward the sides, the latter generally feebly converging from the eyes to the rounded basal angles; prothorax distinctly elongate, subparallel, with broadly rounded basal angles, only very slightly narrower than the head, the punctures rather coarse, widely scattered near the sides, more distinct in the subimpressed series along the medial smooth area as usual; elytra nearly as in *dimidiata* but narrower and distinctly elongate; abdomen narrower than the elytra. Male with the emargination of the fifth ventral very gradually formed, shallow, broadly rounded, three or four times as wide as deep and an eighth or ninth as wide as the segment; sixth segment with the impression shorter and broader, conical, with its apex broadly

rounded and not acute as in the preceding species, the shallow and broadly rounded apical sinus nearly similar, fully three-fifths as wide as the apex. Length 4.4 mm.; width 0.65 mm. Virginia, Tennessee, Mississippi (Vicksburg) and Texas (Austin).....**fllitarsis** n. sp.

4 — Body slender, polished, pale yellowish-testaceous in color, the abdomen sometimes slightly piceous with the apex broadly rufescent; head parallel at the sides, the angles obtuse but only slightly rounded, the base arcuate, the punctures fine and very sparse; antennae as long as the head and prothorax, rather slender and only very feebly incrassate distally; prothorax slightly elongate, only just visibly narrower than the head, the sides subparallel and nearly straight, the apical angles very narrowly, the basal broadly, rounded; surface with a few coarse punctures forming an arcuate series near the sides anteriorly and others forming the usual series bounding the median impunctate area; elytra distinctly elongate, subparallel, two-fifths wider and a third longer than the prothorax, the punctures fine and extremely sparse, arranged in a few series as in the preceding species; abdomen slightly narrower than the elytra, more minutely and more closely punctulate than in *filitarsis* and the other species. Male not at hand; female with the sixth ventral very broadly and feebly rounded behind. Length 4.0 mm.; width 0.62 mm. Arizona (Tuçson).....**lituaria** Lec.

The species described by Say under the name *Lathrobium dimidiatum*, is improperly identified in our cabinets, the name being applied to the species called *filitarsis* in the table. *Filitarsis* appears to be rather inconstant in other respects than the coloration of the elytra, for example in the convergence of the sides of the head behind the eyes, some examples having the sides parallel without regard to sex. The male sexual characters, are, however, virtually constant, and so no division can be attempted. Dr. Sharp records *dimidiata* from Mexico, but the species is probably not the same, although congeneric, as may also be the case with *pusilla* Shp., from Tabasco.

Lathrobiella n. gen.

This genus is the most extensive of the plicate Lathrobia and is composed of small species, frequently closely allied among themselves. It has the same geographical distribution as *Lathrotaxis*, although inclined to a more northern range, and, up to the present time, is wanting as far as known in California, where *Lathrotaxis* is represented by a single very isolated species, *atronitens* belonging to the Sonoran fauna

and not truly to that of California. The species represented in my cabinet may be divided for convenience into several sections, as shown in the table, based largely upon general habitus. The section represented by *ambigua* Lec., is very distinct in facies from the others. The species may be known by the following characters: —

Species of the *ventralis* type. Head small; prothorax larger, parallel, with all the angles rounded, the elytra large, with the punctures finer, more close-set and sometimes not distinctly serial..... 2

Species of the *collaris* type. Head small; prothorax nearly as in the preceding, the anterior angles generally less rounded, the surface more coarsely punctured; elytra wider and longer than the prothorax but usually smaller than in the *ventralis* type, with the punctures coarser, sparser and arranged in more or less impressed series..... 3

Species of the *aemula* type. Head moderately small; prothorax oblong, with all the angles more or less rounded; elytra much less developed, but little wider and longer than the prothorax, with the punctures arranged in close-set impressed series..... 7

Species of the *ambigua* type. Body smaller and more depressed than in the preceding sections, the head subequal in width to the prothorax, the latter elongate, parallel, narrow, with the sides straight, the anterior angles right and not obviously rounded; elytra longer and much wider than the prothorax, with the punctures rather irregularly serial..... 10

2 — Body moderately stout, black, the prothorax slightly piceous, the entire abdomen paler, dark piceo-rufous, the legs and antennae pale; surface polished, the abdomen densely dull; head about as long as wide, the sides behind the eyes distinctly converging and straight to the basal angles, which are obtusely rounded, the punctures coarse and sparse; eyes rather prominent, at one-half more than their own length from the base; antennae moderately slender, feebly incrassate distally, as long as the head and prothorax, the medial joints about one-half longer than wide; prothorax much wider than the head, distinctly longer than wide, the sides parallel and very feebly arcuate, the punctures not very coarse but deep and distinct, sparse, more aggregated narrowly along the median smooth line; elytra parallel, distinctly elongate, two-fifths wider and longer than the prothorax, the punctures not very coarse but deep and strong, rather close-set, the series indistinct and extending only slightly behind the middle; abdomen slightly narrower than the elytra, parallel, straight at the sides, minutely and very densely punctulate. Male unknown; female with the sixth ventral broadly subangulate at tip, the angle obtusely rounded. Length 4.7 mm.; width 0.88 mm. Texas (Galveston) ..... **nigricans** n. sp.

Body rather more slender and elongate, shining with the abdomen densely dull, pale rufo-testaceous in color, the head black, the elytra black but rufo-piceous narrowly along the suture and broadly toward base, the abdomen infuscate; legs and antennae pale; head as long as wide, the sides behind the eyes very feebly converging and straight to the obtuse

but only slightly rounded basal angles, the base truncate; punctures sparse, rather coarse; antennae nearly as in *nigricans* but rather thicker, the medial joints less than one-half longer than wide; prothorax more elongate, distinctly wider than the head, parallel and very feebly arcuate at the sides, the punctures only moderately sparse, rather coarse and distinct, unevenly serial along the median smooth area; elytra much elongated, parallel, fully a third wider and longer than the prothorax, the punctures small but distinct, rather close-set, serial except toward tip, sometimes rather confused throughout; abdomen parallel, distinctly narrower than the elytra. Male with the fifth ventral unmodified, the sixth feebly impressed along the middle, the sides of the impression obtusely rounded and not abrupt, the apex with a subtriangular sinus with rounded angle, nearly a third as wide as the apex, somewhat wider than deep and apparently eccentric and asymmetric, being to the right of the centre — estimating from the segmental base — and with its right side more strongly diverging from the axial line than the left; female not at hand. Length 4.5 mm.; width 0.8 mm. New Jersey. [= *Lathrobium tricolor* Csy.?] ..... **ventralis** Lec.

Body larger and much stouter, the head black; prothorax and elytra uniform and concolorous, rufo-piceous, the abdomen piceous-black, becoming rufous at tip and narrowly at the apex of each segment; legs and antennae testaceous; head nearly as in *ventralis*, the eyes rather larger, the nearly straight sides equally feebly converging and meeting the broadly arcuate base in obtuse angles, which are scarcely at all rounded; prothorax distinctly elongate, much wider than the head, parallel, the sides broadly arcuate, the punctures rather coarse and not very sparse, not lineate along the smooth area; elytra large, much elongated, subparallel, a third wider and two-fifths longer than the prothorax, the punctures not coarse but distinct, impressed, rather close-set and partially serial; abdomen broad, equal in width to the elytra, finely and densely punctulate. Male unknown; female with the sixth ventral very obtusely subangulate and rounded at tip. Length 4.9 mm.; width 0.92 mm. Pennsylvania ..... **barda** n. sp.

3 — Antennae half as long as the body in the male, rather shorter in the female, slender, but very slightly incrassate distally, the medial joints nearly twice as long as wide. Body rather stout, only moderately convex, colored as in *collaris;* head fully as long as wide, coarsely and sparsely punctate, parallel at the sides, the angles rounded; prothorax large, only very slightly longer than wide, smaller and straighter at the sides in the female, much wider than the head, the sides feebly convergent from apex to base and broadly, evenly arcuate throughout; anterior angles rather distinct, the punctures fine and very sparse, lineate along the median smooth space; elytra depressed, slightly elongate, the sides feebly diverging and straight throughout, a fourth wider and a third longer than the prothorax, the punctures strong, though not very coarse, not close-set, arranged in even impressed series, confused toward tip; abdomen broad, scarcely narrower than the elytra, minutely, densely punctulate. Male with the fifth ventral unmodified, the sixth not impressed but broadly glabrous toward the middle, the apex with a large triangular notch much wider than deep, two-fifths as wide as

the apex, gradually formed, with the angle distinctly rounded, the lobes of the apex evenly and rather strongly rounded. Length 4.6-5.4 mm.; width 0.88 mm. Iowa and Nebraska (Lincoln)....**gracilicornis** n. sp.

Antennae distinctly less than half as long as the body; the medial joints less elongate.... 4

4 — Prothorax smaller when compared with the elytra, its sides frequently almost straight.....5

Prothorax larger, the sides parallel and always distinctly arcuate.....6

5 — Prothorax parallel and broadly arcuate at the sides; body moderately stout, convex, polished, bright rufous, the legs and antennae pale, the head black, the abdomen piceous-black, dull rufescent at tip; head as long as wide, parallel and straight at the sides, with broadly rounded basal angles, coarsely and sparsely punctate; antennae in the male as long as the prothorax and elytra combined, only moderately slender, scarcely at all incrassate, the medial joints three-fourths longer than wide, a little shorter and thinner in the female; prothorax in the male only slightly elongate, rather distinctly wider than the head, finely but distinctly, very sparsely punctate, the punctures irregularly subserial along the smooth area, narrower in the female, with the sides almost straight; elytra distinctly longer than wide, the sides subparallel and almost straight, fully two-fifths wider and longer than the prothorax in both sexes, the punctures not coarse but distinct, arranged in regular and scarcely impressed series almost throughout; abdomen much narrower than the elytra, densely punctulate. Male with the fifth ventral unmodified, the sixth glabrous and very faintly impressed along the middle, the apex with a very small triangular emargination, slightly wider than deep, with its angle narrowly rounded, about a sixth or seventh as wide as the apex, the lateral lobes strongly rounded; female with the sixth ventral broadly parabolic at tip. Length 5.7 mm.; width 0.95 mm. Oregon.....**oregonensis** n. sp.

Prothorax parallel and virtually straight at the sides — at least in the female; — body rather more slender and parallel, bright rufous throughout, except the head which is black, the piceous-black abdomen rufescent at tip; head rather well developed, somewhat wider than long, parallel at the sides, the basal angles only moderately broadly rounded; eyes rather prominent, well developed, the punctures coarse and sparse; antennae in the female but little longer than the head and prothorax, rather thick, distinctly incrassate distally, the medial joints two-thirds longer than wide; prothorax distinctly elongate, only slightly wider than the head, the sides subparallel and straight, the punctures unusually coarse, deep and conspicuous and only moderately sparse; elytra parallel, slightly elongate, a third wider and longer than the prothorax, with moderate punctures not very close-set in regular impressed series, confused toward tip; abdomen distinctly narrower than the elytra. Male unknown. Length 5.5 mm.; width 0.9 mm. Tennessee (Nashville).....**fallax** n. sp.

6 — Antennae nearly half as long as the body, rather thick, distinctly incrassate distally, the medial joints only slightly less than twice as long as wide; head small, as long as wide, parallel at the sides, the angles broadly rounded, the punctures coarse and sparse; prothorax a

little longer than wide, much wider than the head in both sexes, the sides subparallel and feebly arcuate, the basal angles broadly rounded, the punctures fine, feeble, very sparse and inconspicuous; elytra parallel, distinctly elongate, about a fourth wider and a fifth longer than the prothorax in the male, relatively wider and longer in the female, the punctures not very coarse, strongly impressed and distinct, not very close-set in distinctly impressed series, confused toward tip; abdomen rather wide, but little narrower than the elytra, densely punctulate. Male with the fifth ventral unmodified, the sixth narrowly glabrous and subimpressed along the middle, the apex with a triangular emargination about as deep as wide, gradually formed, about a third as wide as the segmental apex, with its angle acute and not obviously rounded; lobes of the apex strongly, evenly rounded; female more abundant than the male, nearly similar but with a relatively smaller prothorax. Length 5.0–5.8 mm.; width 0.85–0.92 mm. Massachusetts, Rhode Island, New York, Pennsylvania, Indiana and Iowa..... **collaris** Er.

Antennae rather stout, distinctly incrassate distally, nearly half as long as the body, with the medial joints about three-fourths longer than wide in the male; coloration as in *fallax;* head fully as long as wide, rather coarsely, very sparsely punctate, nearly as in *collaris* but with the basal angles less broadly rounded; prothorax as in *collaris* but shorter, only very slightly longer than wide, the sides distinctly arcuate, similarly finely and sparsely punctate; elytra distinctly elongate, the sides subparallel, a third wider and longer than the prothorax, the punctures smaller, feebler and less close-set than in *collaris* but similarly arranged, the series much less impressed; abdomen narrower, distinctly narrower than the elytra, densely dull and punctulate as usual. Male with the fifth ventral unmodified as usual, the sixth narrowly glabrous along the middle only in posterior half or slightly more, not distinctly impressed, the apex with a very small triangular notch about as deep as wide, only about a fifth as wide as the apex, the angle of the notch not distinctly rounded, the lobes of the segmental apex rounded, the notch apparently somewhat asymmetric, the right side — proceeding from the segmental base — being more divergent than the left; female unknown. Length 5.3 mm.; width 0.85 mm. North Dakota (Devil's Lake)..... **vagans** n. sp.

Antennae thick but filiform, not appreciably incrassate distally, only very slightly longer than the head and prothorax in the female, the medial joints nearly as in *vagans*; coloration as in that species; head small, nearly as in *vagans* throughout; prothorax rather large, distinctly wider than the head and longer than wide, the sides parallel, broadly arcuate, more rounded posteriorly and narrowed toward base as usual, the punctures small but deep and distinct, sparse; elytra much elongated, the sides subparallel, two-fifths wider and longer than the prothorax, the punctures very fine and feeble, inconspicuous, widely set in unimpressed series, confused toward tip; abdomen parallel, densely dull, much narrower than the elytra. Male unknown. Length 5.7 mm.; width 0.9 mm. Nevada (Elko), — Mr. Wickham..... **habilis** n. sp.

7 — Male sexual characters of the *collaris* type, a small triangular notch at

the apex of the sixth ventral, the surface not obviously impressed.... 8
Male sexual characters more pronounced, the notch of the sixth ventral larger and deeper, the surface impressed..... 9

8 — Antennae more slender than in *collaris*, gradually, rather distinctly incrassate distally, much longer than the head and prothorax, the medial joints distinctly less than twice as long as wide; body decidedly more slender than in any of the preceding species, colored nearly as in *collaris*, the elytra more piceous, the abdomen dark and fuscous, scarcely paler at tip; head nearly as in *habilis*, the punctures rather small and very sparse; prothorax distinctly elongate and wider than the head, the sides parallel, evenly arcuate throughout, not more converging toward base, the apical and basal angles almost equally rounded; punctures very fine, sparse and inconspicuous; elytra much elongated, parallel, scarcely a fourth wider and about a third longer than the prothorax, the punctures very fine but distinctly impressed, not close-set in almost wholly unimpressed series; abdomen slender but only slightly narrower than the elytra, densely dull. Male unknown;; female with the sixth ventral obtuse and very broadly ogival at tip. Length 5.0 mm.; width 0.8 mm. Virginia (Fredericksburg)..... **merens** n. sp.

Antennae as in *merens* but longer, stouter and much more strongly incrassate distally, extending nearly to the middle of the elytra; body still more slender, almost similarly colored, the head black, the prothorax bright testaceous, the elytra darker piceo-testaceous, the abdomen blackish, rufescent toward tip; legs and antennae pale; head nearly as in *merens* but with the basal angles very much more broadly rounded; prothorax similar but larger, distinctly elongate and wider than the head, parallel, the sides evenly and feebly arcuate, the four angles subequally rounded; punctures equally fine and sparse, except in the series along the median smooth area, where they are larger, the series distinctly impressed, except very near the base and toward apex; elytra subparallel, elongate, barely a fifth wider, and a fourth longer than the prothorax, the punctures small and arranged in broadly and distinctly impressed series; abdomen narrower than the elytra, minutely, densely punctulate but less dull than in some other species. Male with the fifth ventral wholly unmodified, the sixth narrowly glabrous and subimpressed along the middle, the apex with a triangular notch, much wider than deep, fully two-fifths as wide as the apex, gradually formed and with its anterior angle slightly blunt, the notch evidently eccentric and asymmetric, being situated slightly to the right of the centre and having its right side much more widely diverging than the left; female not known. Length 5.4 mm.; width 0.78 mm. North Carolina (Asheville). **aemula** n. sp.

9 — Body rather slender, fusiform, the head and abdomen piceous-black, the latter not rufescent at tip; prothorax dark testaceous to piceous, the elytra blackish-piceous, sometimes paler along the suture and at base; legs and antennae testaceous; head just visibly narrowed from the eyes to the moderately rounded basal angles, the sides straight; eyes well developed, the punctures rather coarse, very sparse; antennae extending to basal third of the elytra, rather stout, moderately incrassate, the medial joints scarcely more than one-half longer than wide;

prothorax obviously elongate, much wider than the head, the sides parallel and straight, the basal angles rather more rounded than the apical, the punctures fine, very sparse, larger and more close-set in the unimpressed series limiting the medial smooth space; elytra elongate, a fourth to fifth wider and a third to fourth longer than the prothorax, subparallel at the sides, the punctures fine and not close-set, arranged in unimpressed series; abdomen distinctly narrower than the elytra, densely punctulate and dull. Male with a very small, extremely shallow sinus at the middle of the apex of the fifth ventral, the sixth strongly impressed along the middle, the impression rather abruptly limited laterally, gradually narrowing from the apex and disappearing near basal fourth, the apex with a large deep and abruptly formed triangular notch, two-fifths as wide as the apex and fully one-half deeper than wide, with its angle narrowly rounded, the notch wholly within the impression, which extends narrowing along its sides to the apex, the apical lobes narrowly rounded; female with the sixth ventral obtusely rounded at tip. Length 4.5 mm.; width 0.75 mm. Mississippi (Vicksburg).

modesta n. sp.

10 — Eyes of normal size and prominence, situated at distinctly less than twice their own length from the base 11

Eyes notably smaller than usual, situated at about twice their own length from the base 12

11 — Body rather slender, the head black, the prothorax pale testaceous, the elytra pale flavo-testaceous, with a small piceous cloud at the scutellum; abdomen blackish, rufescent in apical third; legs and antennae pale; head rather wider than long, very sparsely punctate, the sides parallel; angles only moderately rounded; antennae rather stout, moderately incrassate distally, extending to basal third of the elytra, the medial joints less than one-half longer than wide; prothorax oblong-elongate, parallel, just visibly wider than the head, the punctures small but distinct, sparse, somewhat larger and close-set in the series bounding the medial smooth area; elytra evidently longer than wide, the sides diverging throughout and straight, fully two-fifths wider and longer than the prothorax, finely, very sparsely punctate, the punctures arranged in unimpressed series; abdomen rather wide, but little narrower than the elytra, minutely, closely punctulate but only moderately dull in lustre. Male unknown; female with the sixth ventral narrowly and strongly rounded at tip. Length 4.2 mm.; width 0.7 mm. New York (near the city) ..... **fragilis** n. sp.

Body somewhat more slender; head obscure testaceous to piceous-black, the prothorax and elytra pale flavo-testaceous, the latter with a rounded piceous cloud about the scutellum; abdomen fuscous, paler toward tip, the legs and antennae pale; head as in *fragilis* but narrower and as long as wide, the basal angles still more narrowly rounded; antennae longer and more slender, extending fully to the middle of the elytra, only very feebly incrassate distally, the medial joints rather more than one-half longer than wide; prothorax narrower and relatively more elongate, subparallel and straight at the sides, only very slightly wider than the head, punctured as in *fragilis;* elytra similar in form though relatively larger, more strongly and closely punctate, nearly one-half wider and

two-fifths longer than the prothorax; abdomen narrower, more densely punctulate and dull, distinctly narrower than the elytra. Male with the fifth ventral wholly unmodified, the sixth elongate-ogival in form, the very narrow apex with a minute and circularly rounded, very abruptly formed emargination, a third wider than deep, the lobes of the apex acute and not rounded, the surface adjacent with an ill-defined but distinct impression along the median line, strongest at apex and disappearing at two-fifths from the base; female nearly as in *fragilis*. Length 4.0 mm.; width 0.68 mm. Pennsylvania, Indiana and Mississippi (Vicksburg).....**rubida** n. sp. (Fvl. MS.)

12 — Head slightly wider than the prothorax. Body very slender, the head and prothorax piceous-black, the elytra testaceous, with a piceous scutellar cloud; abdomen blackish, rufescent at tip, the legs and antennae pale; head well developed, sparsely, rather coarsely punctate, parallel at the sides, the angles rather broadly rounded; eyes very small, at two and one-half times their length from the base; antennae moderate, slightly incrassate, the medial joints scarcely one-half longer than wide; prothorax narrow and notably elongate, the sides just visibly converging throughout and straight, the punctures sparse but rather coarse, very close-set in a single impressed series at each side of the medial smooth area; elytra narrow and elongate, the sides straight, only just visibly diverging, the punctures fine, sparse, arranged in unimpressed series; abdomen not quite parallel, at base distinctly narrower than the elytra, but, posteriorly, fully as wide as the latter, finely but not very densely punctulate and feebly shining. Male with the fifth ventral wholly unmodified, the sixth broadly obtuse at tip, with a parabolic and gradually formed sinus, a third as wide as the apex, twice as wide as deep and symmetric, the adjoining surface narrowly and feebly impressed along the middle for a short distance; female unknown. Length 4.7 mm.; width 0.68 mm. Iowa.....**famelica** n. sp.

Head more or less distinctly narrower than the prothorax.....13

13 — Form slender, subparallel, slightly depressed, pale testaceous throughout, the elytra sometimes clouded with piceous toward, but not attaining, the suture; head and abdomen piceous or black, the latter rufescent toward tip; head parallel at the sides, very sparsely punctate, the basal angles not broadly rounded; eyes at very slightly less than twice their own length from the base; antennae rather thick, extending nearly to the middle of the elytra, feebly incrassate, the medial joints barely one-half longer than wide; neck distinctly more than half as wide as the head; prothorax elongate, narrow, parallel, the sides straight, punctured as in *rubida;* elytra elongate, the sides feebly diverging and straight, two-fifths wider and fully a third longer than the prothorax, the punctures moderate, impressed, rather close-set in scarcely impressed series; abdomen narrower than the elytra, subequal thereto posteriorly, densely punctulate and dull. Male with the sixth ventral nearly as in *rubida,* the apex slightly more obtuse, the notch a little larger and twice as wide as deep and the impression of the surface broader, feebler and less defined. Length 4.2 mm.; width 0.7 mm. Iowa and Lake Superior.....**ambigua** Lec.

Form slender, parallel, nearly similar to the preceding but more convex,

blackish-piceous, the prothorax but slightly paler; elytra with a piceous scutellar cloud; abdomen rufescent at tip, the legs and antennae pale; head larger, coarsely and rather less sparsely punctate, parallel, the basal angles moderately rounded; eyes at twice their length from the base; antennae rather slender, nearly half as long as the body, feebly incrassate distally, the medial joints two-thirds longer than wide; prothorax elongate, scarcely visibly wider than the head, subparallel, all the angles well rounded, the punctures fine, sparse, more distinct and rather unevenly crowded in the feebly impressed series along the medial smooth area; elytra elongate, the sides straight and very feebly divergent, about a fourth wider and scarcely a third longer than the prothorax, punctured nearly as in *ambigua;* abdomen parallel, subequal in width to the elytra, finely but strongly, densely punctulate and rather dull. Male unknown; female with the sixth ventral very broadly rounded and obtuse at tip. Length 4.3 mm.; width 0.68 mm. Indiana? (Cab. Levette). **integra** n. sp.

Form slender and parallel, normally convex, larger than the two preceding, pale and bright testaceous in color, the head and abdomen black or slightly piceous, the latter rufescent at tip; head very sparsely, rather coarsely punctate, parallel, the basal angles rather well rounded; eyes at slightly less than twice their own length from the base; antennae moderately long and slender, only just visibly incrassate, the medial joints three-fourths longer than wide; neck one-half as wide as the head; prothorax oblong, parallel, the sides straight, all the angles rounded, distinctly elongate and slightly wider than the head, the punctures rather small but strong, only moderately sparse, not larger and only indistinctly seriate along the median smooth space; elytra slightly elongate, parallel and straight at the sides, a third wider and one-fourth longer than the prothorax, the punctures fine but distinct, rather close-set in very feebly impressed narrow series; impression along the sutural bead narrow but deep and conspicuous; abdomen subparallel, narrower than the elytra, finely, densely punctulate though slightly shining. Male unknown; female with the sixth ventral broadly rounded at tip. Length 5.2 mm.; width 0.78 mm. North Carolina (Asheville)..... **angustula** n. sp.

The eccentricity and asymmetry of the secondary male sexual modifications seems to be a reality in many species of this genus, for it is unlikely that abnormalities of this kind would occur with such uniformity and with such constancy of character. In this connection the reader is referred to a pronounced asymmetry in the secondary sexual characters of *Palaminus*, alluded to some years ago by the writer. There are four quite distinct types of male sexual characters in *Lathrobiella:* first the usual triangular notch of the *ventralis* and *collaris* groups, also appearing in *aemula* and probably *merens;* second the more strongly marked modifications characterizing *modesta* —

rather a singular circumstance in view of the notable external similarity of this species to *aemula;* third the rounded sinus of *famelica*, and, fourth, the pointed sixth segment with very minute notch observable in *ambigua*, *rubida* and probably *fragilis*, these last species differing from the others also in the much more widely diverging gular sutures, less pronounced difference between the first and second joints of the hind tarsi and more depressed form, — so that they probably constitute at least a subgenus. The grouping in the table is arbitrary and based solely upon general habitus, in order to facilitate identification. The *ambigua* group, for example, contains several discordant elements.

Of the species allied to *collaris*, as given above — these being likely to prove most troublesome to the identifier, — it may be stated in short that *gracilicornis* is distinguished by its longer antennae, *oregonensis* by its larger and broader elytra, *follax* by the strong pronotal sculpture, *vagans* by sexual differences in the male and rather more slender form, and, *habilis*, by its almost completely non-incrassate antennae and very feeble elytral sculpture. There are other forms which appear to be offshoots of the *collaris* stem, but at present it would serve no useful purpose to describe them. *Collaris* is an abundant species, widely diffused through the northeastern parts of America and is one of the few plicate Lathrobiids thus far known to occur in the New England states.

Tricolor was stated some years ago by Dr. Horn to be a synonym of *ventralis* Lec., but I am by no means certain of the correctness of this synonymy, the unique type of *ventralis* differing considerably in color. Additional comparisons are desirable. The above description is drawn from the original types of *tricolor*.

Microlathra n. gen.

The few species assignable to this genus are readily distinguishable from those of *Lathrobiella* by the more parallel form, uniformly pale coloration, larger subpyriform head, with very small eyes and a general habitus which strongly recalls

Lathrobioma of the non-plicate series. It is probable that both of the known species are found with ants, at least at certain seasons, for a specimen of *pallidula*, given me by the late Mr. Jülich, was said to have been taken by him in an ant's nest. The degree of intimacy between various beetles and ants of course varies greatly, and, in many Staphylinids, such as those under discussion, there is but little evidence of true symbiosis, or it may be said at least, that the degree of association has not been carried sufficiently far to have modified their structure to any noticeable extent. The eyes, it is true, are unusually small, but they are perfectly formed and probably perform the full function of eyes as in other genera. The two species in my cabinet may be briefly described as follows: —

Form slender, parallel, pale testaceous throughout, polished; head as long as wide, very slightly enlarged toward base, the sides broadly arcuate; angles broadly rounded, the punctures not very coarse, sparse; eyes at fully three times their own length from the base; antennae rather thick, slightly longer than the head and prothorax, gradually and distinctly incrassate, the medial joints less than one-half longer than wide; prothorax somewhat narrower than the head, longer than wide, the sides very feebly converging from the distinct apical angles, sometimes broadly and feebly sinuate anteriorly, the basal angles rounded, the punctures fine, very sparse and feeble, sparsely subserial along the median smooth area; elytra slightly shorter than wide in the male and but little longer in the female, distinctly shorter than the prothorax in both sexes and obviously wider, the sides straight and strongly diverging, the punctures very fine, sparse and feeble, obscurely subserial in arrangement; abdomen at base as wide as the elytra or nearly so, distinctly wider posteriorly, finely, not densely punctulate and somewhat shining. Male with the fifth ventral wholly unmodified, the sixth broadly obtuse at tip, with a small simple subtriangular and gradually formed emargination, three times as wide as deep and a third as wide as the apex, the lobes of the latter broadly, feebly rounded; female with the sixth ventral evenly and strongly rounded at tip. Length 4.1 mm.; width 0.68 mm. Massachusetts (Lowell) and New York (Staten Island).....**pallidula** Lec.

Form still more slender, with smaller head and prothorax and much larger elytra; coloration and lustre similar; head fully as long as wide, rather finely, moderately sparsely punctate, broadening slightly toward base, the sides broadly arcuate, the angles widely rounded; eyes at three times their length from the base; antennae extending to basal third of the elytra, nearly as in *pallidula;* prothorax elongate, equal in width to the head, parallel, the sides very feebly arcuate; anterior angles distinct, the posterior narrowly rounded; punctures fine, feeble and

very sparse, forming a widely-set series along the median smooth space; elytra subparallel, distinctly longer than wide, a fourth longer and fully a fourth wider than the prothorax, the punctures small and sparse but arranged in widely and feebly impressed series; abdomen distinctly narrower than the elytra, subparallel, finely, not densely punctulate. Male unknown; female with the sixth ventral evenly and rather strongly rounded behind. Length 4.1 mm.; width 0.66 mm. Pennsylvania..... .....**rutilans** n. sp.

Neither of these species seems to be at all common and I have but four examples altogether.

Dacnochilus Lec.

The general habitus of this genus is similar to that of *Linolathra* and the coloration of the body also reminds us of the small slender species so named above. There are many structural features, also, that prove the very close relationship existing between the two genera, such as the hind tarsi, gular sutures and disposition of the elytral punctures. *Dacnochilus* differs especially in the form of the labrum, in the short obtrapezoidal form of the prothorax and presence of long stiff tactile setae bristling at the sides of the body — so greatly developed in *Acalophaena*. We have, as far as known, but a single species as described below: —

Form slender, convex and parallel, polished, pale testaceous throughout, except about basal half of the elytra, which is abruptly black; head well developed, wider than long, with a few coarse impressed punctures near the sides, the latter feebly diverging behind the eyes and slightly arcuate, the angles narrowly rounded; eyes large, prominent, at about a third more than their own length from the base; antennae distinctly longer than the head and prothorax, rather slender basally but gradually strongly incrassate distally, the medial joints less than one-half longer than wide; prothorax obtrapezoidal, distinctly wider than long, equal in width to the head, the sides very feebly arcuate, the anterior angles narrowly rounded, the basal more broadly, the punctures rather small, very widely scattered toward the sides anteriorly and widely spaced in a single series at each side of the median smooth area, elsewhere wanting; elytra not quite as long as wide, parallel, the sides feebly arcuate posteriorly, slightly wider and longer than the prothorax, the punctures fine and feeble, widely spaced in a very few widely separated series, each puncture bearing a stiff hair; abdomen behind the middle as wide as the elytra, slightly narrower at base, finely, very sparsely punctulate and polished. Male with the fifth ventral unmodified, except a small

and very feeble sinuation at the middle of the apex; sixth narrow, with a circularly rounded apical sinus, four or five times as wide as deep and half as wide as the apex, the edge finely beveled, the surface conically and moderately impressed along the middle before the sinus, the impression not abruptly formed and glabrous; female with the sixth ventral conical, transversely sinuato-truncate at tip. Length 5.5 mm.; width 0 85 mm. Texas (Galveston) ..... **laetus** Lec.

Other species of this genus occur in Mexico. The pleural fold of the elytra characterizing the preceding genera appears to be wholly obsolete in *Dacnochilus*, but the fine carina delimiting the epipleurae proper is well developed. In *Acalophaena* there is a feeble vestige of the pleural fold posteriorly.

Acalophaena Shp.

This remarkable genus, although evidently related to *Dacnochilus*, is much more highly specialized. The body is singularly compact longitudinally, broadly convex, with a relatively narrower neck than in *Dacnochilus* and with the abdomen densely punctulate, in striking contrast to that genus; the antennal joints are less narrowed toward base than usual or may be said to be almost subcylindric and the basal joint is not of the usually elongate cylindrical form, but is shorter and strongly compressed. Our only species known to me is the following: —

Form very broad, convex, polished, bristling with long setae at the sides, pale testaceous throughout, except the abdomen, which is infuscate; head very transverse, trapezoidal, the sides strongly diverging to the narrowly rounded basal angles and almost straight; base very broad, truncate; eyes rather small, not prominent, at nearly twice their own length from the base, the punctures wholly wanting, except a few, small in size, sparsely scattered at the extreme sides; antennae very slender, only slightly incrassate, rather compact, as long as the head and prothorax, the latter not quite twice as wide as long, the sides slightly converging from apex to base and evenly arcuate; anterior angles distinct, the posterior broadly rounded; base and apex truncate; surface wholly sculptureless, except a few small punctures near the side margins, especially anteriorly; elytra two-thirds wider than long, the sides straight, slightly diverging at apex, slightly wider than the prothorax and nearly two-fifths longer; suture not beaded; surface not impressed along the suture, wholly sculptureless, except a few small punctures serially arranged at the extreme sides; abdomen short and broad, as wide as the

elytra, the sides converging rapidly from base to apex and broadly arcuate; segments very short; surface finely, densely punctulate and dull. Male unknown; female with the sixth ventral narrow, transversely truncate at tip. Length (contracted) 3.2 mm.; width 1.0 mm. Arizona. **compacta** n. sp.

There are other species of this genus in northern Mexico* but I do not know of any additional from our own territories. *Acaloph ena* was proposed by Dr. Sharp as a substitute for the preoccupied name *Calophaena* Arrib., (Bol. Acad. Nac., vii, p. 270), founded upon the Argentine *basalis* Arrib. The Mexican *angularis* Er. and the South American *polita*, *pagana*, *germana* and *picta*, of Sharp, included by Dr. Sharp, differ greatly from the two species here described in their slender form and relatively broader neck, and it is probable that they will prove to be generically different. It is a remarkable fact that *compacta* and *horridula* agree much more closely with *basalis* — the type of the genus — than those just mentioned. The very short compact form and unusual facies of *compacta* and *horridula*, would seem to indicate some specialized or restricted life habits, such for example as a termitophilous symbiosis, which is also ascribed by Arribálzaga to the typical *basalis*, while *angularis* and the others allied thereto, probably have habits not differing in any way from those of *Dacnochilus*.

Lithocharis.

The densely punctulate and dull sculpture, together with certain habital features of this subtribe, gives to the species a superficial similarity to the Medones — so much so that the genus *Lithocharis* has been included by Heyden, Reitter and

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* One of these may be described as follows: —

Form and structure throughout as in *compacta* but larger, pale testaceous throughout, except the head and elytra which are black, the apex of the latter very narrowly — but more broadly toward the sides — testaceous; sculpture and tactile setae similar to those of *compacta*, the abdominal punctulation less dense and with the surface shining, each segment with a transverse median series of erect stiff setae not evident in *compacta*. Length. 44 mm.; width 1.2 mm. Mexico (Vera Cruz).....**horridula** n. sp.

Weise as a subgenus of *Medon*. They differ radically from the Medones, however, in the structure of the prosternum under the coxae, this sclerite ending posteriorly in an acute free point, coming far from attaining the mesosternum and formed as in the Lathrobia. The labrum, also, differs from anything known in the Medones and in fact is subtribally distinctive, for, although in several other subtribes, such as the Paederi and Medones, we occasionally observe a short sharp denticle at the bottom of the median emargination, there is no other group in which the median tooth becomes the most conspicuous feature or formed as it is here. In short, the distinctive character of the labrum in the Lithochares is a median tooth, without trace of lateral denticulation, while in the Medones it is the development of lateral teeth and absence of anything but a rarely observable and wholly different medial denticle. The Lithochares agree with the Medones, however, in having the anterior tarsi either dilated or undilated, departing from the uniformly dilated condition of the Lathrobia. We have but two genera as follows:—

Form rather stout, parallel, larger in size, moderately convex, finely, densely sculptured and dull in lustre; head oblong, well developed, broadly sinuato-truncate at base; eyes moderately large, not very prominent; labrum well developed, broadly arcuato-truncate, with a short, obtuse and dorsally swollen median tooth, not projecting beyond the general line of the apex and bordered at each side by a small emargination; gular sutures well separated anteriorly, gradually converging and most approximate and narrowly separated at the base; ligula densely fimbriate at tip with broad obtuse strigose and submembranous spicules; paraglossae compressed; labial palpi slender and elongate; maxillary palpi slender, elongate, the third joint elongate-oval, with the apical cavity small, the fourth joint very slender and aciculate, not very oblique; antennae slender, filiform, moderate in length, the joints obconical; neck barely two-fifths as wide as the head; prothorax obtrapezoidal, broadly produced in the middle at apex, truncate at the neck; prosternum short before the coxae; elytra well developed, longer and wider than the prothorax; abdomen with the segments only feebly impressed at base; legs slender, the anterior tarsi moderately dilated, densely padded beneath, the posterior three-fourths as long as the tibiae, with the first joint much longer than the second and subequal to the fifth, nearly as in *Dolicaon*. America.. **Aderocharis**

Form rather more slender, less parallel, the head small, finely, densely dull in sculpture throughout; head broadly arcuato-truncate at base, the eyes large and conspicuous; labrum as in *Aderocharis* but with the

sinuation at each side of the median tooth broader and feebler; antennae, gular sutures and palpi similar; ligula densely fimbriate at tip with about six stout membranous spicules; neck scarcely more than a third as wide as the head; prothorax subquadrate; prosternum rather short; elytra large and well developed; abdomen narrower, the segments narrowly and feebly impressed at base; legs slender, the anterior tarsi not dilated, the posterior slender and shorter, the first joint only slightly longer than the second, equal to the fifth, the first four decreasing uniformly in length. Cosmopolitan. [= *Metaxyodonta* Csy.].
Lithocharis

The known species of these genera are comparatively few in number.

Aderocharis Shp.

This genus is rather well represented in Mexico by several species, but only one occurs widely distributed within our territories as follows: —

Body broad, parallel, only very moderately convex, dark red-brown in color throughout, the head black or blackish; surface throughout rendered very dull in lustre by fine, densely placed but not confluent punctures, which are granuliform on the elytra; head not quite as long as wide, parallel, the sides feebly arcuate, the angles rather narrowly rounded; eyes at nearly twice their length from the base; antennae scarcely as long as the head and prothorax, the latter not quite as wide as the head, slightly wider than long, with the sides distinctly converging from the very distinct apical, to the broadly rounded basal, angles, and straight; median impunctate line very fine but entire; elytra quadrate, parallel, a fourth wider and longer than the prothorax; abdomen parallel, nearly as wide as the elytra. Male with the fifth ventral just visibly sinuate toward the middle of the apex, the sixth broad, angularly emarginate throughout its entire width at apex, the emargination some seven times as wide as deep, with the angle only slightly rounded; seventh unusually developed, finely, longitudinally slit beneath nearly throughout its length; female with the sixth ventral rather narrowly and strongly rounded at tip. Length 6.5 mm.; width 1.3 mm. Pennsylvania, Virginia, North Carolina (Asheville), and Iowa..... **corticina** Grav.

This species is moderately abundant and displays little or no variability.

Lithocharis Lac.

The species of this genus are but few in number, and, in several instances, cosmopolitan in distribution, being probably

continually transported in articles of commerce, as there is no variation, even of a varietal nature, to denote long establishment in any particular locality, but, whether originating in America or Europe, is a question not yet solved; the probabilities are that the genus was originally exclusively American. The three species in my cabinet may be readily known as follows from the male: —

Male with a fringe of short black spinules in median third of the fifth ventral. Body moderately slender, subfusiform, feebly convex, pale brown throughout and dull in lustre, the head black; punctures fine and extremely close-set, subgranuliform on the elytra; head rather wider than long, subparallel at the sides, the angles rather broadly rounded; eyes at not quite their own length from the base; antennae somewhat longer than the head and prothorax, the latter slightly wider than the head, a little wider than long, the sides parallel and feebly arcuate; base and apex broadly, equally and subevenly arcuate, the angles obtuse but only slightly rounded; median smooth line obsolete; elytra quadrate, parallel, two-fifths wider and longer than the prothorax; abdomen parallel with the sides broadly arcuate, narrower than the elytra throughout. Male with a large subparabolic emargination, much wider than deep, occupying the entire width of the sixth ventral, the surface along each side of the sinus broadly, feebly impressed and bearing a dense tuft of long pale hairs; apex of the fifth transversely truncate, the spinules in median third turned inward. Length 3.7 mm.; width 0.7 mm. America (from the Atlantic to the Pacific) and Europe. [= *Metaxyodonta alutacea* and *quadricollis* Csy.].

ochracea Grav.

Male without trace of median spinules at the apex of the fifth ventral.. 2

2 — Form similar to *ochracea*, the size somewhat smaller; coloration, lustre and sculpture similar; head similar to that of *ochracea*, the eyes large and at distinctly less than their own length from the base; gular sutures similarly strongly impressed but rather less approximate, being well separated; prothorax equal in width to the head, similar in form to that of *ochracea*; elytra large, quadrate, parallel, two-fifths wider and longer than the prothorax; abdomen arcuate at the sides behind the middle, scarcely narrower than the elytra. Male with the fifth ventral very feebly sinuate toward the middle of the apex; sixth with a large parabolic sinus, wider than deep, occupying the entire width, the surface at the sides not impressed, the lateral edges of the sinus bristling with very long close-set hairs. Length 2.9 mm.; width 0.62 mm. Southern California, — Mr. Fall.....**simplex** n. sp.

Form more slender, the size still smaller, darker and more piceous in color with the head black, but similarly dull in lustre and densely punctulate; head fully as long as wide, parallel and nearly straight at the sides, the angles similarly moderately rounded; eyes much smaller, at distinctly more than their own length from the base; antennae more slender and much shorter, not as long as the head and prothorax;

gular sutures less impressed, more approximate toward base; prothorax differing greatly in form, about as long as wide, the sides feebly converging from the base to the apex and slightly arcuate; apex more strongly arcuate than the base, the apical angles very obtuse and rounded, a little wider than the head; elytra slightly longer than wide, subparallel, two-fifths wider and nearly one-half longer than the prothorax, paler at the sides than on the disk; abdomen distinctly narrower than the elytra throughout. Male with the fifth ventral truncate at apex and unmodified, the sixth much narrower, rectilinearly truncate at tip and otherwise unmodified. Length 2 7 mm.; width 0.6 mm. Arizona.....**sonorica** n. sp.

The female in both *ochracea* and *simplex* has the apex of the sixth ventral broadly angulate, with the angle more or less rounded. The single specimen of *sonorica* before me has the apex of the sixth ventral truncate, and, as the sexual modifications are so simple, it may in reality be a female, but in any event it is a remarkably distinct species. The concealed ligula of the seventh ventral in *Lithocharis*, is spatuliform, narrowed toward tip, and densely clothed with silvery pubescence.

The Henshaw catalogue (3rd suppl., p. 10) lists a *Lithocharis debilis* Woll. I have been unable to find any such species described. The *debilis* of Erichson (Gen., p. 625) inhabits Colombia and the description does not correspond with any of our species as given above.

Medones.

The multitude of small species of more or less monotonous appearance, composing this group, are rather difficult to classify in a satisfactory manner, owing to the fact that the male sexual characters are usually simple and but slightly varied; the genus *Paramedon*, however, offers a very welcome exception in this regard. The group is much more highly developed in America than in Europe, comprising the following nineteen genera within the limits of the United States, only two of which — *Neomedon* and *Sciocharis* — are certainly known to extend for any great distance into Mexico: —

Gular sutures completely fused, forming a single coarse suture from the angulate post-mental piece to the base..... 2

Gular sutures always separated, sometimes very feebly impressed and occasionally altogether effaced and traceable only by differences in sculpture between the intersutural region and the remainder of the under surface of the head 3

2 — Labrum short and very broad, truncate, broadly, feebly sinuate at the middle and having six very small teeth or tooth-like undulations; species very large in size for the present group; paraglossae coarsely and angularly bilobed; palpi normal, the third joint of the maxillary fully a third longer than the second; eyes moderate; antennae rather thick, filiform, the third joint very much longer than the second; prosternum feebly and obtusely carinate posteriorly; tarsi moderately slender, the basal joint of the posterior distinctly longer than the second, the anterior distinctly dilated and spongy beneath in both sexes; integuments shining, simply and rather coarsely punctate, the neck one-half as wide as the head; male ventral characters very slight. Sonoran..**Neomedon**

Labrum narrower, more rounded, with four acute and well developed teeth and a small median notch, which is acutely denticulate at the bottom; species moderate in size; paraglossae of the usual form, acutely bilobed; ligula setose at tip; eyes rather small; palpi normal; antennae rather thick, filiform, the third joint only slightly longer than the second; prosternum acutely carinate posteriorly; tarsi rather short and thick, the basal joint of the posterior much longer than the second, the anterior thickened but scarcely dilated; integuments very densely dull, the sculpture rather coarse and extremely dense; neck rather narrow, from rather more than a third to two-fifths as wide as the head; male unknown. Sonoran .....**Polymedon**

3 — Labrum bidentate..... 4

Labrum quadridentate.....13

Labrum without teeth, though having the usual small median notch.....18

4 — Antennae with the two basal joints normally thick, the remainder very slender, filiform and verticillate; labral teeth small but distinct and approximate, the notch small; species generally dull in luster, with close fine sculpture..... 5

Antennae normal, equally or subequally thick throughout, sometimes feebly enlarged toward tip..... 6

5 — Gular sutures moderately separated, gradually converging and most narrowly separated toward base; eyes more or less well developed, the neck rather broad but usually less than half as wide as the head; prosternum not carinate except posteriorly; tarsi moderately short and somewhat thick, the basal joint of the posterior distinctly longer than the second, two to four decreasing in length, the anterior more or less distinctly dilated; species very numerous, small in size, always rather distinctly punctured, the male sexual characters simple, the fifth segment scarcely modified. South America to the warmer parts of North America .....**Sciocharis**

Gular sutures very widely separated and most approximate anteriorly, thence widely diverging to the base of the head; eyes rather small; neck nearly half as wide as the head; prosternum not at all carinate; tarsi short and moderately thick, the first joint of the posterior distinctly longer than the second, two to four equal and about as long as

wide, the anterior not in the least dilated or thickened; species very minute, not distinctly punctured; male sexual characters nearly as in *Sciocharis*, except that the apex of the fifth segment is lobed in the middle. Southern Atlantic States.....**Sciocharella**

6 — Labral teeth small and inconspicuous; prosternum never carinate throughout its length except in a few abnormal members of *Medon*.. 7

Labral teeth long, acute and very conspicuous; prosternum carinate throughout its length; gular sutures converging and most narrowly separated basally.....12

7 — Basal joint of the posterior tarsi equal in length to the second, the first four short and subequal, the anterior very slightly dilated; palpi normal; gular sutures rather narrowly separated, evenly, feebly arcuate, very rapidly diverging at base, most narrowly separated at a little before the middle; antennae rather thick, gradually enlarged distally, the third joint distinctly longer than the second; eyes moderate; neck about half as wide as the head; prosternum not at all carinate at any point; integuments very coarsely, densely sculptured and dull, the species small in size. Nearctic regions, east of the Rocky Mountains. **Trachysectus**

Basal joint of the hind tarsi distinctly longer than the second, the tarsi more elongate.....8

8 — Labrum with a rather broad sinus at the middle including the two teeth, which are very small and not as anteriorly prominent as the sides of the labrum; species small, with the elytra very small, shorter and narrower than the prothorax; eyes rather small; neck two-fifths as wide as the head; gular sutures well separated and subparallel but obsolete or very feeble; antennae short, moderately thick, filiform, not enlarged distally, the basal joint thicker than the remainder; prosternum rather strongly carinate except anteriorly; posterior tarsi very slender and filiform, the anterior slightly dilated; integuments rather coarsely, densely sculptured and dull. Appalachian region.....**Hemimedon**

Labrum with a narrower median notch, the two teeth more advanced than the lateral parts of the edge and not included within the sinus.....9

9 — Anterior tarsi not dilated but only more or less strongly thickened; sexual characters very feeble.....10

Anterior tarsi strongly dilated, especially in the male; sexual characters strongly marked.....11

10 — Gular sutures distant, broadly arcuate, becoming very widely divergent toward base and most narrowly separated well before the middle; species small, slender in form, polished and sparsely punctate, the elytra subequal to the prothorax in size; antennae moderately thick, somewhat enlarged distally; labrum very broadly, angularly emarginate, with a small feeble median sinus, the teeth very minute; eyes rather well developed; neck a little less than half as wide as the head; anterior tarsi spongiose beneath in both sexes; hind tarsi slender and filiform. Europe.....***Hypomedon**

Gular sutures of the same form as in *Hypomedon* but subobsolete; species minute, slender, polished and sparsely, rather coarsely punctate, the elytra shorter than the prothorax; antennae normal in structure; labrum small, truncate, with a distinct rounded median sinus and two well

developed aciculate teeth; eyes very small; neck barely two-fifths as wide as the head; anterior tarsi scarcely thickened, not at all spongiose beneath; hind tarsi very slender, filiform. Europe.....***Micromedon**

Gular sutures more or less approximate, gradually converging and most narrowly separated near the base of the head; species small to moderately large in size, generally very finely, rather closely punctured and only moderately shining; eyes very small; antennae moderately thick, gradually enlarged distally; neck about two-fifths as wide as the head; hind tarsi moderately slender. Palaearctic and Nearctic regions..**Medon**

11 — Gular sutures converging and most narrowly separated basally; species small or moderate in size, of rather stout form, shining, the punctures fine and well separated; antennae as in *Medon*; eyes well developed; neck rather wide, almost half as wide as the head; prosternum only carinate at the posterior cusp; elytra larger than the prothorax; posterior tarsi moderately slender. Pacific coast regions.....**Paramedon**

12 — Body moderately small in size, very slender, dull in lustre but not distinctly punctate, parallel, the elytra subequal to the prothorax; gular sutures widely separated; paraglossae coarsely, angularly bilobed, the ligula simple at apex; palpi nearly normal, the second joint of the labial compressed, the fourth joint of the maxillary small; antennae moderate in length, slender, filiform, not appreciably enlarged distally, the third joint but little longer than the second, the first rather longer than the next two combined though but little thicker; eyes very small; neck unusually narrow, scarcely a third as wide as the head; prosternum strongly carinate. Sonoran.....**Medonodonta**

Body somewhat stout and more convex, moderately large in size, polished, strongly but not densely punctured; gular sutures narrowly separated; oral organs nearly as in the preceding, the eyes well developed; antennae long, rather slender, feebly enlarged distally, the third joint distinctly longer than the second, the first somewhat elongate but not much thicker; neck two-fifths as wide as the head; elytra larger than the prothorax; hind tarsi rather longer than usual, moderately slender, the anterior noticeably dilated. Pacific coast regions.....**Oxymedon**

13 — Gular sutures rather approximate, converging, most narrowly separated basally. Body moderately small in size, subdepressed, rather stout, subalutaceous, very finely, rather closely punctured, the elytra much larger than the prothorax; lobes of the paraglossae rather obtuse at apex; third maxillary palpal joint unusually inflated, somewhat compressed and scarcely longer than the second; antennae rather thick, feebly enlarged distally, the third joint but little longer than the second; eyes moderately developed; neck scarcely two-fifths as wide as the head; prosternum carinate; posterior tarsi short and rather thick, the first joint almost as long as the next two combined, the anterior distinctly dilated; labrum with four large and conspicuous acute teeth, the small deep rounded median notch with a minute obtuse denticle at the bottom, the structure throughout nearly as in *Polymedon*. Appalachian region.....**Tetramedon**

Gular sutures more or less widely separated, parallel or broadly arcuate, becoming more widely divergent basally.....14

14 — Labrum with a small rounded median notch limited by the two inner

teeth, which are long, very acute and prominent, the outer teeth very minute and sometimes rather widely separated from the inner. Body moderately large in size, depressed, shining or alutaceous, the sculpture very fine; head rather small, the elytra large; outer lobe of the paraglossae longer than the inner, both pointed; third maxillary palpal joint long, rather slender and compressed; eyes rather well developed; antennae moderately long and slender, scarcely visibly enlarged distally, the joints subcylindrical; neck a little less than half as wide as the head; prosternum strongly carinate posteriorly; hind tarsi very long and slender, filiform, four-fifths as long as the tibiae, the basal joint almost as long as the next two combined; anterior tarsi slightly dilated, more distinctly in the male. Nearctic regions.....**Platymedon**

Labrum with the usual small median notch and four very small teeth, the latter much less unequal among themselves and frequently very difficult to perceive.....15

15 — Elytra small, not longer than the prothorax; eyes small.....16

Elytra well developed, always longer than the prothorax, the eyes large..17

16 — Body minute in size, polished, sparsely punctured, the gular sutures wholly obsolete and traceable only by the absence of punctures on the intervening surface; antennae short, the basal joint stout, the remainder very slender but unusually clavate distally; neck rather less than half as wide as the head; palpi short; prosternum tumid but scarcely carinate posteriorly; hind tarsi short, moderately stout, the basal joint nearly as long as the next two combined, the anterior feebly dilated. Caribbean region.....**Medonella**

Body very small in size and of slender form, shining though rather coarsely and closely sculptured; gular sutures fine and sometimes subobsolete; antennae longer, normal, thicker, feebly enlarged distally; neck two-fifths as wide as the head; palpi longer and well developed; prosternum rather strongly carinate except anteriorly; hind tarsi longer, very slender and filiform, the basal joint distinctly shorter than the next two combined; anterior tarsi slightly thickened but not at all dilated. Pacific coast regions.....**Oligopterus**

17 — Body moderate to very small in size, slender, more or less finely and closely sculptured, the gular sutures fine; head small as a rule; antennae rather short, moderately stout, filiform, scarcely thickened distally; neck two-fifths as wide as the head; prosternum strongly carinate posteriorly; hind tarsi long and very slender, filiform, the basal joint nearly as long as the next two combined, the anterior not at all dilated and but feebly thickened even in the male. Pacific coast regions. **Caloderma**

18 — Body moderate to small in size, rather slender, frequently dull in lustre and extremely finely, usually closely punctulate; head small, the elytra at least as long as the prothorax; palpi well developed, the lobes of the paraglossae small; mentum unusually elongate; gular sutures very fine and remotely separated, most approximate anteriorly and thence widely diverging to the base; antennae rather thick, filiform, not appreciably enlarged distally; eyes well developed; neck two-fifths as wide as the head; prosternum carinate posteriorly; hind tarsi rather short, somewhat stout, the basal joint longer than the second, the

anterior more or less strongly dilated in both sexes. Palaearctic and Nearctic regions. [= *Ramona* Csy.] ..... **Pseudomedon**

Body minute in size, feebly, not very densely sculptured, the head and elytra larger than the prothorax; palpi well developed; gular sutures as in *Pseudomedon* but less widely separated; mentum shorter, strongly transverse; antennae short, unusually enlarged or claviform distally; eyes well developed; neck fully two-fifths as wide as the head; prosternum scarcely at all carinate; hind tarsi rather long, very slender and filiform, the basal joint distinctly shorter than the next two combined, the anterior merely thicker, not at all dilated. Regions bordering the Gulf of Mexico ..... **Lena**

The European *Hypomedon* Rey, is included for comparison and completeness; it is undoubtedly distinct from *Medon* and not a subgenus as stated by Heyden, Reitter and Weise in the catalogue of those authors. *Micromedon* (n. gen.) is founded upon the European *Medon seminigrum*, of Fairmaire. It is more closely related to *Hypomedon* than any other genus, but differs greatly in habitus and in labral structure, as well as in its non-spongiose anterior tarsi and minute eyes.

Neomedon Shp.

The genus *Neomedon*, as outlined by Dr. Sharp in the "Biologia," has the body subdepressed, the labrum short, broad, scarcely or not at all emarginate and minutely trituberculate at each side, the first joint of the posterior tarsi one-half longer than the second and the anterior slightly dilated. In view of these characters, in connection with the comparatively large size of the species, and the fact that the genus appears to extend to the northernmost limits of the regions covered by the "Biologia," leads me to believe that the following species, from which the generic diagnosis of the above table is taken, is truly a member of the genus under consideration:—

Body stout, subdepressed, parallel, black in color, the elytra, legs and antennae more or less bright rufous, the surface distinctly shining, with the punctures of the head coarse, rounded and distinctly separated, those of the pronotum finer but almost as close-set and about equal to those of the elytra, the abdomen very minutely and densely punctulate, head large, distinctly wider than long, parallel and straight at the sides; the basal angles rather broadly rounded, the base broadly sinuate;

prothorax small, strongly obtrapezoidal with the sides straight, much wider than long and distinctly narrower than the head, the angles distinct and only moderately rounded; elytra quadrate, subequal in width to the head, the sides parallel and feebly arcuate. Length 7.5 mm.; width 1.35 mm. Arizona (Williams), — Mr. Wickham. **arizonense** n. sp.

The secondary male sexual characters are very simple, consisting of a large and broadly rounded shallow sinus at the tip of the sixth ventral segment. The species seems to be rather rare and I have only seen two specimens thus far.

Polymedon n. gen.

This genus is also represented within our limits by a single species, which is very abundant, but, rather singularly, the only sex known to me is the female and I have searched in vain for the male through the numerous specimens in my cabinet. The male sexual characters are, however, probably simple. I have not been able to indentify *Polymedon* with any of the many Mexican genera made known by Dr. Sharp, and it is probably a local type, confined to the arid parts of the Sonoran regions. The type species may be described as follows:—

Body moderately stout and convex, parallel, dark red-brown throughout, the elytra rather more rufous; integuments densely dull because of the rather coarse and mutually subcontiguous punctures, the elytra feebly shining and less densely punctate, the abdomen very minutely punctulate and also slightly shining; head moderately large but not quite as wide as the elytra, parallel and feebly arcuate at the sides, the basal angles broadly rounded; prothorax much narrower than the head and almost as long as wide, feebly obtrapezoidal, the sides straight, the angles obtusely rounded; elytra subquadrate, scarcely as long as wide, about a fourth wider than the prothorax and almost two-fifths longer, the sides parallel, feebly arcuate posteriorly. Length 4.5 mm.; width 0.9 mm. Arizona.....**tabacinum** Csy.

The specimens at hand are from various parts of Arizona, and, in some, the head is relatively a little smaller, with the neck somewhat wider, but I can discover no other specific differences.

Sciocharis Arrib.

A part of the large collection of Staphylinidae brought back from Brazil by Mr. H. H. Smith, placed in my hands for examination some years ago, revealed a most astonishing variety in this genus and I remember mounting about twenty species; to state therefore that there are more than a hundred species within the limits of Brazil alone, ought to be a very conservative estimate. *Sciocharis* is probably equally well represented throughout Central America and Mexico, so that it may be said to be one of the largest — possibly the largest — genus of American Paederini. In the United States of America, it is represented, as far as known to me at present, by the three following species, the first of which belongs more properly to the fauna of Mexico: —

Second antennal joint much thicker but not longer than the third; punctures much finer, dense, the lustre dull; body rather stout, subdepressed, parallel, pale flavo-testaceous throughout, the head but little darker, the elytra with a large feeble piceous cloud, not extending to the sides, base or apex; head well developed, wider than long, parallel at the sides, the eyes at but little more than their own length from the base, the angles rather narrowly rounded; prothorax distinctly narrower than the head and wider than long, somewhat strongly obtrapezoidal with the sides straight, the angles very narrowly rounded and distinct, the basal broadly rounded; elytra quadrate, parallel, a fourth wider and nearly one-half longer than the prothorax and slightly wider than the head. Male not known. Length 3.0 mm.; width 0.75 mm. Texas (Brownsville), — Mr. Wickham..... **nubipennis** n. sp.

Second antennal joint much longer, as well as thicker, than the third; punctures of the head and pronotum stronger..... 2

2 — Color pale brown throughout, the head slightly darker, piceous; lustre dull; body parallel, moderately convex, the head well developed, as wide as the elytra, parallel and feebly arcuate at the sides, the eyes at nearly twice their own length from the base, the angles moderately rounded; prothorax distinctly obtrapezoidal, well developed, nearly as wide as the head, wider than long, the sides nearly straight, all the angles broadly rounded; elytra quadrate, parallel, about a sixth wider and a third longer than the prothorax. Length 3.0 mm.; width 0.65 mm. North Carolina (Asheville) and District of Columbia.

carolinensis n. sp.

Color blackish, the abdomen piceous, the legs dark brown and the antennae still paler; lustre alutaceous, the punctures dense; body subparallel,

moderately convex, the head moderately developed, wider than long but distinctly narrower than the elytra, parallel and straight at the sides, the angles right and only slightly rounded; eyes still rather smaller, somewhat convex, at twice their own length from the base; prothorax less developed, wider than long, a little narrower than the head, feebly obtrapezoidal, with all the angles broadly rounded; elytra quadrate, a fourth wider and two-fifths longer than the prothorax. Length 2.75 mm.; width 0.65 mm. Mississippi (Vicksburg).....**congruens** n. sp.

Both *carolinensis* and *congruens* are described from the male, in which sex the hind margin of the fifth ventral is transverse, becoming just visibly bisinuate at the middle, and the sixth has at the apex a broad notch, in the form of an incised cusp, with its sides rapidly flaring outward and arcuate, the point of the notch narrowly obtuse. In *congruens* the sides of the notch flare still more widely and the incisure is therefore relatively shallower than in *carolinensis*. The punctures of the head are rather irregular in form and deep, the narrow interspaces having some very minute scattered punctules which appear to bear the visible pubescence. The punctures of the pronotum, and, to some extent, of the elytra, are also peculiar, smaller than those of the head and equally close-set but circular, slightly elevated and bearing each a centrally placed hair. Although so generally distributed over the American continents, *Sciocharis* has not yet occurred in the regions bordering the Pacific Ocean.

Sciocharella n. gen.

The remarkable antennae characterizing this and the preceding genus are unlike anything else in the tribe and thoroughly isolate them. The present genus greatly resembles *Sciocharis*, though composed of much more minute species, but differs very radically in the form of the gular sutures and smaller eyes, as well as in its undilated anterior tarsi. The only species known to me at present is the following:—

Parallel, slender, moderately convex, alutaceous, pale flavo-testaceous throughout, except the head, which is piceous; punctures of the head and pronotum not distinct, very minute, of the elytra extremely minute, rather sparse; head nearly as long as wide, a little wider at base than across the slightly convex eyes, which are situated at rather more than

twice their own length from the base; sides almost perfectly straight, the angles somewhat obtuse but scarcely at all rounded; second antennal joint almost as long as the next two combined and much thicker, prothorax almost as long as wide, scarcely narrower than the head, but just visibly narrower at base than at apex, the sides nearly straight, the angles scarcely at all rounded; elytra quadrate, parallel, much wider than the head, a fifth wider and one-fourth longer than the prothorax. Length 1.75 mm.; width 0.33 mm. Alabama. **delicatula** n. sp.

The male sexual modification of the sixth ventral is very nearly as in *Sciocharis*, being obtusely cuspidiform, with widely flaring arcuate sides of the emargination, but the apical margin of the fifth segment has a broadly rounded coplanar lobe, about a seventh as wide as the segment, projecting from the middle, which lobe is suggested by the very feeble bisinuation of the edge in some forms of *Sciocharis*. Other species of this interesting genus will doubtless be discovered in the course of careful collecting.

Trachysectus Csy.

This genus also has but a single known species, which is widely distributed throughout the colder parts of the North American continent, east of the Rocky Mountains. It may be readily known by its coarse and confluent sculpture and short tarsi, the first four joints of the posterior equal and the anterior slightly dilated: —

Rather stout, parallel, moderately convex, blackish-piceous, the elytra — rather broadly at tip, — antennae toward base and legs, rufous; prothorax also generally rufescent; surface feebly shining, densely sculptured, the head coarsely, with the punctures elongated by compression, the pronotum longitudinally rugose, the hairs borne from the minute granuliform punctules along the middle of the depressions or at the middle of the cephalic punctures, the punctures of the elytra sparser and smaller, asperate, of the abdomen extremely minute; head well developed, as wide as the elytra, a little wider than long, parallel and straight at the sides, the angles broadly rounded; eyes moderately developed, convex; prothorax much narrower than the head, obtrapezoidal, wider than long, the anterior angles obtuse but only slightly rounded; elytra quadrate, parallel, a fifth wider and two-fifths longer than the prothorax. Length 3.5 mm.; width 0.8 mm. Rhode Island and Virginia to Iowa and Minnesota..... **confluens** Say

The male has very simple sexual characters, the fifth segment being unmodified and the sixth having a small triangular median emargination. The under surface of the head is as coarsely and densely sculptured as the upper and the gular sutures are rendered conspicuous by reason of the fact that the narrow space between them is highly polished, sculptureless and concave, gradually broadening near the base. The name *confluens* is an Erichsonian emendation of the originally published "*confluenta*" of Say, (= *Lathrobium confluentum*).

Hemimedon n. gen.

In general appearance the species of *Hemimedon* strikingly resemble the Pacific coast *Oligopterus*, but the likeness is in great part superficial, as shown by the generic characters of the table, the labrum being quite different in structure. The genus appears to be very circumscribed in habitat, and, so far as known, limited in range to the more southern parts of the Appalachian mountain system. The two species before me are mutually as closely allied as those of *Oligopterus*, but may possibly be recognized by the following characters: —

Stouter in form and parallel, feebly shining, blackish-piceous, the abdomen black, the legs and antennae dark rufous; head well developed but distinctly narrower than the prothorax, slightly wider than long, the sides parallel and straight, the angles rather narrowly rounded; eyes at rather more than twice their own length from the base; punctures rather coarse and moderately dense; prothorax large and distinctly obtrapezoidal, the sides broadly, feebly arcuate, the angles well rounded, the punctures finer than those of the head, well separated, the sculpture tending toward longitudinal rugulation; elytra small, slightly narrower than the head, much shorter than wide and much narrower and very much shorter than the prothorax, the sides rather strongly diverging from base to apex, the surface finely but strongly, rather closely and asperately punctate. Length 3.1 mm.; width 0.55 mm. North Carolina (Highlands) and Virginia (Pennington Gap) ..... **rufipes** n. sp.

Slender in form but similar in coloration and lustre to *rufipes*, the punctures of the head and pronotum less coarse and rather sparser, those of the latter notably feeble, of the elytra somewhat finer and denser but of the same character; head as long as wide, rather distinctly narrower than the prothorax, otherwise as in *rufipes;* prothorax much smaller, nearly as long as wide, only just visibly obtrapezoidal, the sides feebly arcuate and the angles rounded; elytra similar to those of *rufipes*,

except that they are transverse, only very slightly narrower than the prothorax though much shorter. Length 3.2 mm.; width 0.45 mm. Virginia, — Mr. Ulke..... **angustum** n. sp.

The gular sutures are widely separated, most narrowly so well to the front, rapidly diverging toward base and are generally subobliterated. The male sexual characters are feeble, the fifth ventral segment unmodified, the sixth having a rounded apical sinuation occupying almost the entire tip, rather more than three times as wide as deep, with the edge of the sinus concavely beveled, gradually more broadly so around the bottom of the sinuation.

Medon Steph.

As far as known at present, the genus *Medon* is confined to the western part of the continent, with the exception of the very small *texanum*, which occurs in Texas and *americanum*, which appears to inhabit the Atlantic slope exclusively. The west coast species are much larger than the European *fusculum* and are generally very finely punctate, sometimes densely so and dull in lustre, while in the eastern *americanum*, the sculpture is comparatively coarse, much as in the palaearctic species mentioned.* The species are far less numerous than those of *Paramedon*, which largely replaces the European genus in America, and those before me may be recognized by the characters outlined in the following table: —

Elytra small, nearly as in *fusculum*, never materially larger than the prothorax; eyes very small; species confined to the Pacific coast regions..2
Elytra large, notably larger than the prothorax; species distributed throughout the United States, frequently associated with ants..... 8
2 — Body pale, castaneous or testaceous in color..... 3
Body black or blackish, the under surface of the head concolorous..... 6

* I have adopted the neuter ending for specific names in this and allied genera for the sake of constancy and uniform law in scientific nomenclature, holding that all generic names ending in *m* or *n* should require the neuter ending, in conformity with the general rule of the Latin language, and, in like manner, that all names ending in *is* or *a* should be feminine and all in *os* or *us* masculine, not even excepting such a name as *Venus*. In other words it is the form of the word which should be considered, when used as a generic symbol, and not its meaning in the original tongue.

3 — Gular sutures gradually converging as usual, but remaining well separated toward the base of the head 4

Gular sutures becoming so nearly fused as to be inseparable with certainty toward the base of the head 5

4 — Body very slender, pale testaceous, rather shining, the head very large as usual, nearly as long as wide, much wider than the prothorax, distinctly wider toward base than across the very small anterior eyes, the sides broadly arcuate and the basal angles widely rounded; punctures small but strong and close-set; prothorax distinctly obtrapezoidal, somewhat wider than long, the angles rounded and the sides very feebly sinuate toward the middle, more finely and sparsely punctured than the head; elytra small, quadrate, only very slightly wider and longer than the prothorax, rather closely and rugosely punctate; under surface of the head pale rufous, convex, shining, finely and sparsely punctate, the gular sutures strongly impressed and distinct. Male unknown. Length 4.5 mm.; width 0.75 mm. California (Hoopa Val., Humboldt Co.).

sinuatocolle Csy.

Body much less slender and more depressed, dark testaceous in color throughout and rather less shining, the head relatively not so large, wider than long, the eyes more prominent and the sides behind them more nearly parallel and feebly arcuate, the width subbasally scarcely perceptibly greater than across the eyes, the angles broadly rounded; punctures finer, rather close-set; prothorax nearly as in *sinuatocolle* but without visible sinuation at the sides and less markedly narrower than the head; elytra distinctly longer, quadrate, a fifth or sixth wider than the prothorax and nearly a third longer, similarly punctate; under surface of the head rather strongly and closely punctate, the gular sutures less impressed and with the intervening space longitudinally impressed toward base. Sinus at the middle of the sixth male ventral of the usual form, deep and broadly rounded at the bottom. Length 4.5 mm.; width 0.85 mm. Idaho (Coeur d'Alène), — Mr. Wickham.

helenae n. sp.

5 — Body moderately slender, larger in size and less depressed, dark castaneous in color throughout, slightly dull in lustre, the punctures — particularly of the head — being close-set; head large, not swollen at base, the sides behind the small and anterior eyes being parallel and broadly, evenly arcuate; basal angles only moderately broadly rounded; prothorax much narrower than the head, wider than long, obtrapezoidal with the sides nearly straight, the angles rounded; elytra small, quadrate, only very slightly wider, though obviously longer, than the prothorax and distinctly narrower than the head; under surface of the head rather strongly, moderately closely punctate, pale in color, the double gular suture deeply impressed. Male sexual characters of the usual form, the semicircular notch of the sixth ventral moderately large. Length 4.7 mm.; width 0.8 mm. California (Sta. Clara Co.) ..... **lepidum** Csy.

Body rather stout, somewhat depressed, parallel, dark castaneo-testaceous in color throughout and moderately shining; head moderately large, wider than long, inflated toward base, where it becomes much wider than across the eyes, the basal angles broadly rounded; punctures fine

but strong, close-set, the interspaces more polished and less dull or minutely reticulated than in *lepidum;* prothorax more finely and a little less closely punctured, obtrapezoidal with the sides straight, wider than long and distinctly narrower than the head, the angles rounded; elytra quadrate, somewhat wider and distinctly longer than the prothorax, subequal in width to the head; under surface of the latter convex, finely, rather sparsely punctate, the double gular suture toward base only feebly impressed. Sinus of the sixth ventral a little larger and relatively broader than in *lepidum*, broadly rounded. Length 4.4 mm.; width 0.8 mm. California (Lake Tahoe)..... **lacustre** n. sp.

6 — Head very large, much wider than the elytra, fully as long as wide, finely, strongly and closely punctate, the sides behind the eyes feebly arcuate to the rounded basal angles, the width just before the latter a little greater than across the very small and anterior eyes; prothorax well developed, much narrower than the head, distinctly wider than long, obtrapezoidal with the sides nearly straight, the angles rounded, the punctures finer and much sparser than those of the head; elytra notably small, not as long as wide, scarcely visibly wider and only very little longer than the prothorax, about four-fifths as wide as the head, distinctly wider at apex than at base; under surface of the head shining, finely, more sparsely punctate; gular sutures very approximate, converging to the base and well impressed. Notch of the sixth ventral of the usual form in circular arc; fifth segment with some stiff black bristles arranged transversely on the disk near the apex, the single series rather widely interrupted at the middle, the apical margin truncate, just visibly sinuate at the middle. Length 3.9 mm.; width 0.68 mm. California (Sonoma and San Mateo Cos.)..... **convergens** Csy.

Head large but smaller than in *convergens* and only slightly wider than the elytra; body black or piceous-black throughout, the legs and antennae rufous..... 7

7 — Prothorax as in *convergens*, distinctly wider than long, obtrapezoidal in form with the sides straight and the angles only moderately rounded; head rather wider than long, moderately inflated and broadly arcuate at the sides behind the very small eyes, distinctly wider before the broadly rounded basal angles than across the eyes; elytra not quite as long as wide, a little wider at apex than at base, distinctly wider and longer than the prothorax but obviously narrower than the head; under surface of the latter finely, sparsely punctate, the gular sutures impressed, converging very gradually and very approximate. Sexual characters of the venter nearly as in *convergens*, the notch of the sixth segment circularly rounded, not quite half as wide as the segmental apex and about three times as wide as deep. Length 4.2 mm.; width 0.72 mm. Vancouver Island (Victoria), — Mr. Wickham..... **insulare** n. sp.

Prothorax much narrower, only just visibly wider than long, with the angles broadly rounded and the sides but feebly converging from apex to base, both the head and prothorax minutely and unusually strongly reticulated and dull, the former finely and feebly but closely, the latter more finely and less closely, punctate; head narrower, as long as wide, not inflated basally, the long sides behind the eyes parallel and almost straight, the angles moderately broadly rounded; elytra about as long

as wide, nearly parallel, the sides straight, subequal in width to the head, a fifth wider and nearly a third longer than the prothorax; under surface of the head finely and rather closely punctate, the sutures as in the two preceding species. Sexual characters of the venter of the usual form, the inclined bristles of the fifth segment not arranged in a regular transverse series near the apical margin, the notch of the sixth circularly rounded, abruptly defined and rather more than three times as wide as deep. Length 4.7 mm.; width 0.72 mm. California (Lake Co.).....**puberulum** Csy.

8 — Eyes very small, always at much more than twice their own length from the base of the head..... 9

Eyes well developed, at scarcely more than twice their own length from the base; species very small.....13

9 — Sculpture coarse and close-set. Atlantic regions.....10

Sculpture very fine, the lustre alutaceous; species large. Rocky Mts....11

10 — Body moderately slender, parallel, dull in lustre, pale red-brown throughout, the legs and antennae concolorous; head as long as wide, not inflated at base, the sides behind the eyes parallel and nearly straight, the angles well rounded, the punctures rather coarse and dense; prothorax distinctly obtrapezoidal with the sides nearly straight, obviously wider than long, slightly narrower than the head and with equally close-set but rather less coarse, rugulose punctuation, which partially obliterates the smooth median line, the angles rather narrowly rounded; elytra somewhat longer than wide, wider than the head, a fourth wider and three-fifths longer than the prothorax, the sides parallel and nearly straight; under surface of the head with the usual reniform punctures densely placed, the gular sutures very fine, not impressed, approximate and gradually converging to the base. Male not known. Length 4.2 mm.; width 0.72 mm. Pennsylvania.

americanum n. sp.

11 — Prosternum as usual, not carinate except posteriorly between the coxae; body rather stout, pale ochreo-testaceous throughout and dull in lustre, the punctures very minute and close-set throughout but rather more visible on the elytra and sparsest on the prothorax; head moderately large, as long as wide, the sides behind the eyes broadly arcuate and slightly convergent throughout to the basal angles, which are slightly more than right and scarcely at all rounded, the base truncate; antennae fully as long as the head and prothorax combined, rather stout; prothorax narrower than the head, somewhat wider than long, the sides subparallel and nearly straight, the angles very obtuse but only moderately rounded; elytra large, wider than the head, nearly a third wider than the prothorax and fully one-half longer, a little longer than wide, parallel; under surface of the head dull, densely, subrugosely punctured, the gular sutures fine, scarcely impressed, gradually converging to the base of the head, where they become narrowly separated. Length 4.5 mm.; width 0.8 mm. Colorado (Ouray), — Mr. Wickham.....**inquilinum** n. sp.

Prosternum carinate throughout its length; basal angles of the head distinctly, though not very broadly, rounded; antennae somewhat long and thick as in *inquilinum*.....12

12 — Body rather stout, parallel, dark rufo-ferruginous throughout, the head and pronotum shining, though finely, rather closely punctate, the latter less closely, the elytra finely, very closely and more distinctly, the abdomen extremely minutely and densely; head moderately large, almost as wide as long, the sides parallel and nearly straight from the eyes to the basal angles; neck half as wide as the head; prothorax large and well developed, subequal in width to the head, a little wider than long, the sides almost straight and parallel, the angles obtusely rounded; elytra large, much larger than the head, somewhat longer than wide, a fourth wider and one-half longer than the prothorax, the sides subparallel; under surface of the head more coarsely, closely and rugosely punctured, the sutures as in the preceding species, with the narrow intervening space becoming polished and impunctate toward base; prosternum convex longitudinally. Length 4.0 mm.; width 0.85 mm. New Mexico (Coolidge), — Mr. Wickham.

nitidulum n. sp.

Body somewhat stout and depressed, dullish in lustre, pale castaneous in color, the head above and the metasternum darker, piceous; punctures fine, feeble and very close-set on the head, sparse on the prothorax, minute and very dense on the elytra and abdomen; pubescence rather conspicuous; head moderate, as long as wide, parallel and nearly straight at the sides; prothorax a trifle narrower than the head, slightly obtrapezoidal, somewhat wider than long; elytra much wider than the head, quadrate, not longer than wide, notably wider and longer than the prothorax, parallel, the sides very feebly arcuate; under surface of the head rugosely and closely punctured but rather less coarsely than in *nitidulum*, the gular sutures similar but more impressed; prosternum flattened longitudinally, the carina more conspicuous than in *nitidulum*. Length 4.6 mm.; width 0.95 mm. California (Lake Tahoe).

opaculum n. sp.

13 — Body small, slender, parallel, polished, the elytra and abdomen duller, rufo-piceous in color throughout, the head usually darker; head and pronotum minutely but deeply and rather closely punctate, the latter but slightly less closely and equally strongly, with a broad smooth median line; head small, as long as wide, parallel and nearly straight at the sides, with slightly obtuse and distinctly, though not broadly, rounded basal angles; antennae slender, not as long as the head and prothorax combined; prothorax wider than the head, as long as wide, quadrate, the sides parallel and very feebly arcuate, the angles rounded; elytra quadrate, not longer than wide, but little wider though notably longer than the prothorax, parallel, sometimes broadly and nubilously paler toward the sides and narrowly at tip; under surface of the head shining, finely, sparsely punctate, the gular sutures very fine, almost obliterated, converging, becoming moderately narrowly separated posteriorly; prosternum convex, not at all carinate except posteriorly. Male with the fifth ventral unmodified, the sixth broadly sinuato-truncate throughout its width at apex, the sinuation very feeble; male rare, the female abundant. Length 2.9 mm.; width 0.5 mm. Texas (Austin and Columbus) ..... **texanum** n. sp.

The described species noted in the above table were previously regarded by the writer as forming "Group A" of *Lithocharis* (Bull. Cal. Acad. Sci., II, 1886), but are evidently congeneric with the European *Medon*. The species described under the names *inquilinum*, *nitidulum* and *opaculum* are apparently associated with ants, or, at least, the first is pinned with some specimens of a small piceous-black ant, having dark brown legs and antennae and 2.2 mm. in length; all three of them are probably rare and are represented at present by unique females. *Americanum* is also represented by a single female, the male being apparently much rarer than the female throughout the genus.

Paramedon n. gen.

This genus is composed of a large number of species confined principally to the true Pacific coast fauna but extending also into the adjacent elevated regions of the continent, having, in fact, a distribution almost precisely similar to that of *Orus*, of the Scopaei. It is closely allied to *Medon*, but has the anterior tarsi much more strongly dilated, especially in the male, and the male sexual characters are of a different character; in external appearance it differs in its rather stouter form with relatively larger elytra. In a previous paper by the author describing a few of the species (Bull. Cal. Acad. Sci., II, 1886), it was erroneously regarded as a section of *Lithocharis*. The species resemble each other to such a degree that it seems to be impossible to separate them in a recognizable manner by descriptions, without making extensive use of the secondary male sexual characters, which conspicuously modify the apex of the fifth ventral segment; these are fortunately sufficiently varied to enable us to do this with greater or less success. The large rounded emargination of the sixth ventral is, however, so constant in form as to be of very little use in classification. The gular sutures vary greatly in extent of separation, from almost complete contiguity, as in *kernianum*, to a very wide degree of separation, as in *gulare*. This enables us to divide the species into

two rather arbitrary sections. The sutures in the second section of the table are sufficiently separated to be readily observed with an ordinary hand lens. In the following table I have recognized twenty-seven species as valid: —

Gular sutures very approximate..... 2
Gular sutures more or less widely separated.....15
2 — Species of the Pacific coast regions..... 3
Species peculiar to Arizona.....14
3 — Median process projecting from the bottom of the broad sinus of the fifth ventral of the male abruptly limited at its sides..... 4
Median process not abruptly limited laterally, broadly arcuate or becoming gradually feebly sinuate medially.....12
4 — Median process about one-third as wide as the sinus or but slightly wider..... 5
Median process much wider, always very much more than one-third as wide as the sinus and always broadly and distinctly sinuate..... 9
5 — The median process short, truncate, parallel-sided, scarcely more than a third as wide as the sinus, which is about three-fifths as wide as the segmental apex, the sides of the sinus between the process and the rectangular apices distinctly and evenly curved, and with the usual fringe of black spinules well developed; gular sutures fine, feeble, scarcely impressed, narrowly but perceptibly separated. Body moderately stout, pale rufo-testaceous throughout, the head above and beneath, prothorax, abdomen above and metasternum piceous-black; head not wider than the prothorax, parallel and nearly straight at the sides; prothorax a little wider than long, feebly obtrapezoidal and but little narrower than the elytra, the latter scarcely longer than wide, paler, rufous, the punctures sparse, the surface shining; abdomen more densely and finely punctured. Length 3.9 mm.; width 0.8 mm. Vancouver Island.....**vancouveri** n. sp.
The median process wider and distinctly sinuate 6
6 — Head parallel and straight at the sides behind the eyes, which are unusually small, the basal angles rather narrowly rounded. Body dark testaceous in color, the abdomen blackish; surface shining, rather sparsely punctate, the elytra more finely and closely and the abdomen densely; gular sutures fine, approximate though sensibly separated, scarcely impressed; head distinctly wider than the prothorax, the latter sensibly wider than long, very feebly obtrapezoidal; elytra rather longer than wide, a fifth wider and nearly one-half longer than the prothorax. Sinus of the fifth segment well developed, about three-fourths as wide as the segmental apex, the process two-fifths as wide as the sinus, broadly sinuate at tip, with its lateral angles rounded, the sides diverging to the base; sides of the sinus between the process and rectangular apices feebly curved and with about eight black spinules. Length 3.7 mm.; width 0.85 mm. California (Siskiyou Co.).....**shastanicum** n. sp.
Head parallel but more or less feebly arcuate at the sides behind the eyes, which are rather larger, the basal angles much more broadly rounded,

distinctly wider than the prothorax though less obviously so in *humboldti*, the prothorax very faintly obtrapezoidal and distinctly wider than long, with the sides nearly straight..... 7

7 — Punctures sparse, the surface more shining; body notably stout, blackish-piceous in color, the elytra paler and generally bright rufous, the legs testaceous; head large, the antennae as long as the head and prothorax, the elytra distinctly wider than the prothorax and as wide as the head, rather longer than wide; gular sutures fine, straight and parallel, approximate though sensibly separated and not impressed. Sexual characters of the male identical with those of *shastanicum*, the sinus of the fifth segment about two-thirds as wide as the segmental apex but with the process virtually similar. Length 4.0 mm.; width 0.95 mm. California (Sta. Cruz to Lake Co.).....**latiusculum** Csy.

Punctures close-set, the surface more alutaceous; body less stout..... 8

8 — Body more evenly parallel, the prothorax notably larger and only slightly narrower than the head or elytra, blackish-piceous, the prothorax, elytra, legs and antennae paler and piceo-testaceous; elytra obviously longer than wide, a fourth wider and rather more than one-half longer than the prothorax; gular sutures very approximate and distinctly impressed. Sinus of the fifth ventral broad and well developed but not very deep, the process scarcely at all more than one-third of its total width, broadly sinuate with rounded angles, its sides but feebly divergent to the base; fimbriate sides only very feebly, evenly curved and but slightly narrower than the process; surface of the segment feebly flattened toward the middle throughout, the flattened area more finely and sparsely pubescent. Length 4.2 mm.; width 0.8 mm. California (Sta. Clara Co.).....**malacum** Csy.

Body less evenly parallel, the elytra being notably wider than the head and a fourth wider and one-half longer than the prothorax, not longer than wide, still more finely and closely punctured, dark rufo-testaceous, the head and abdomen blackish, the legs pale; abdomen notably narrower than the elytra; gular sutures fine but distinct, not distinctly impressed, very narrowly separated. Sinus of the fifth segment nearly as in *malacum*, but with the fimbriate sides evenly though more strongly curved, only slightly narrower than the median process, which is more broadly sinuate and nearly parallel-sided; surface of the segment not modified. Length 3.8 mm.; width 0.75 mm. California (Humboldt Co.).....**humboldti** n. sp.

9 — Gular sutures almost completely contiguous and distinctly impressed; head large, with the basal angles broadly rounded, notably wider than the prothorax.....10

Gular sutures very narrowly but perceptibly separated and not or very feebly impressed; head only very slightly wider than the prothorax; species smaller in size.....11

10 — Sinus of the fifth segment about three-fifths as wide as the apex, only moderately deep, the median process somewhat less than half as wide as the sinus, with rounded lateral angles, sinuate throughout almost in circular arc, the sinus five or six times as wide as deep; sides of the process slightly diverging to the base, the fimbriate sides of the sinus rather strongly curved. Body finely, not very densely punctate,

except the abdomen which, as usual, is densely and more finely punctate, piceous, the elytra rather bright rufous, the legs pale; head behind the clypeal margin fully as wide as long, parallel and straight at the sides behind the rather well developed eyes; prothorax slightly wider than long, very feebly obtrapezoidal; elytra large, rather longer than wide, wider and longer than the head, a third wider and three-fifths longer than the prothorax. Length 4.5 mm.; width 0.9 mm. California (Kern Co.).....**kernianum** n. sp.

Sinus similar in extent and depth, the median process a little larger, about half as wide as the sinus, more deeply but less broadly sinuate in subparabolic arc, but little more than four times as wide as deep, the sides feebly diverging from the rather narrowly rounded and subrectangular angles to the base, the fimbriate sides of the sinus feebly curved. Body finely, not very closely punctate anteriorly, blackish-piceous, the elytra but slightly paler, the legs brownish-testaceous; head not quite as long as wide, parallel and straight at the sides behind the eyes, which are rather well developed; prothorax slightly wider than long, nearly straight and parallel at the sides, the angles all rounded as usual; elytra but slightly wider than the head, rather longer than wide, a fourth wider and half longer than the prothorax. Length 4.6 mm.; width 0.8 mm. California (near San Francisco)...**consanguineum** Csy.

11 — Head unusually narrow, rather longer than wide and only just visibly wider than the prothorax, parallel and straight at the sides behind the rather well developed eyes, the basal angles moderately broadly rounded; prothorax but little wider than long, the sides straight and almost parallel, the angles all rather less rounded than usual; elytra about a fourth wider and half longer than the prothorax, fully as long as wide; body unusually slender, piceous, polished and sparsely punctulate anteriorly; elytra and legs but little paler. Secondary sexual characters of the fifth ventral almost as in *consanguineum* throughout. Length 4.0 mm.; width 0.7 mm. California (San Mateo Co.).....**contiguum** Csy.

Head broader behind the clypeal margin, fully as wide as long, the sides behind the rather well developed eyes parallel and straight, with the basal angles rather broadly rounded; prothorax well developed, feebly obtrapezoidal, slightly wider than long, with almost straight sides and rather narrowly rounded angles, just visibly narrower than the head; elytra quadrate, scarcely a fourth wider and less than one-half longer than the prothorax; body moderately slender, blackish-piceous, the elytra and legs slightly paler, rufescent; integuments shining, very finely and not closely punctate anteriorly. Sinus of the fifth ventral three-fifths as wide as the apex, the median process very wide, nearly three-fifths as wide as the sinus, its sinus very broad, deep and parabolic, occupying the entire apex and about five times as wide as deep, its angles rather narrowly rounded and the sides but feebly diverging to the base; fimbriate sides of the segmental sinus rather strongly curved, the spinules about six in number. Length 3.7 mm.; width 0.75 mm. California (southern — probably Los Angeles Co.).....**subsimile** n. sp.

Head still broader behind the clypeal margin, a little wider than long, the sides behind the unusually small eyes subparallel and broadly arcuate, the width just before the broadly rounded basal angles rather greater

than at the eyes; prothorax obviously narrower than the head, distinctly and rather strongly obtrapezoidal, somewhat wider than long, the sides nearly straight and the angles moderately broadly rounded; elytra scarcely wider and but little longer than the head, not quite as long as wide, a fifth wider and one-third longer than the prothorax; body moderately stout, piceous-black, prothorax slightly paler, the elytra and legs rufous, the head rather densely punctate, the pronotum more sparsely and shining. Sinus of the fifth segment unusually narrow, but little more than half as wide as the apex and shallow, the process unusually wide and large, three-fourths as wide as the sinus, broadly sinuate in its median three-fourths in circular arc; fimbriate sides of the segmental sinus very short, strongly curved and with about five spinules. Length 3.8 mm.; width 0.8 mm. California (locality unrecorded)..... **difforme** n. sp.

12 — Process slightly more than one-third the total width of the sinus, its sides diverging at an angle of 45° to the base, its sides at apex broadly rounded, its median sinus feeble in circular arc, broadly toward the middle; fimbriate sides or the principal sinus broadly, evenly and feebly curved; surface of the fifth segment not flattened. Body moderately slender, piceous-black, rather shining, finely and not closely punctate anteriorly, the prothorax slightly, the elytra and legs distinctly, paler; head rather small and narrow, as long as wide, the basal angles very broadly rounded, the sides thence to the well developed eyes straight and parallel; prothorax well developed, fully as wide as the head, parallel and straight at the sides, a little wider than long; elytra scarcely as long as wide, rather more than a fourth wider and fully one-third longer than the prothorax; gular sutures gradually becoming very approximate posteriorly, slightly impressed. Length 4.0 mm.; width 0.8 mm. California (Mendocino and Sta. Cruz Cos.). **retrusum** Csy.

Process much wider, broadly arcuate throughout or becoming slightly truncate toward the middle, never distinctly sinuate..... 13

13 — Body less slender, piceo-rufous, the head darker and the abdomen black; head as wide as long, parallel and straight at the sides behind the eyes with the basal angles rounded, not evidently wider than the prothorax, the latter distinctly wider than long, parallel at the sides with rounded angles; elytra quadrate, much wider and longer than the prothorax. Process in the sinus of the fifth segment broadly, evenly arcuate throughout its width and fully half as wide as the sinus. Length 4.0 mm.; width 0.85 mm. California (Napa Co.). **sublestum** Csy.

Body slender, piceous, the prothorax and flanks of the elytra nubilously pale, the legs very pale; surface shining anteriorly; head rather wider than long, parallel and straight at the sides, distinctly wider than the prothorax, the basal angles rounded; prothorax straight and parallel at the sides, fully as long as wide, with broadly rounded angles; elytra rather longer than wide, nearly one-half wider than the prothorax and three-fifths longer; gular sutures quite distinctly, though narrowly, separated; parallel, except anteriorly, where they become rather abruptly divergent. Process of the fifth ventral very large, three-fifths as wide as the sinus, broadly arcuate throughout its width and becom-

ing slightly truncate toward the middle; fimbriate sides — making an angle of 45° with a transverse line — feebly curved. Length 3.9 mm.; width 0.7 mm. California (Sonoma Co.) ..... **languidum** Csy.

14 — Moderately slender, fusco-testaceous, the head and abdomen black, the flanks of the elytra nubilously paler, the legs pale; anterior parts rather shining, the punctures small and not dense, fine and dense on the elytra and abdomen; head rather small, distinctly wider than long, the basal angles only moderately broadly rounded, the base broadly truncate, the neck a little narrower than usual, the sides behind the eyes straight and parallel, the eyes larger than usual, more than half as long as the distance thence to the base of the head; prothorax well developed, fully as wide as the head or a little wider, almost as long as wide, broadly rounded at apex, the sides parallel; elytra quadrate, a fourth wider and nearly one-half longer than the prothorax; gular sutures widely separated anteriorly, straight and gradually convergent thence nearly to the base, becoming very approximate, the space between them anteriorly densely and roughly sculptured, the intersutural area very feebly impressed. Length 3.9 mm.; width 0.8 mm. Arizona.

apacheanum n. sp.

15 — Species inhabitating the regions immediately bordering the Pacific Ocean 16

Species inhabiting the high Sierras and eastward 22

16 — Prothorax more or less distinctly wider than long 17

Prothorax smaller, oblong, fully as long as wide and apparently longer, always narrower than the head; species frequently very small in size, the neck narrower than usual 21

17 — Gular sutures very widely separated, the intervening space at the narrowest point wider than the maximum width of the third palpal joint 18

Gular sutures less widely separated, the intervening space slightly narrower than the width of the third palpal joint 19

18 — Body rather small and slender, feebly shining anteriorly with the head more alutaceous, dark testaceous in color, the head somewhat and the abdomen notably, darker, piceous, the elytra clouded with piceous; legs pale; head finely, rather closely punctate, convex, rather wider than long, very slightly wider than the prothorax, straight and parallel at the sides behind the rather small eyes, the basal angles broadly rounded; prothorax only just visibly wider than long, nearly straight and subparallel at the sides, sparsely punctate; elytra rather longer than wide, fully two-fifths wider and one-half longer than the prothorax; gular sutures broadly arcuate, feebly impressed, least separated at, or a little behind, the middle of the post-oral surface, which is rather finely and sparsely punctate. Median process in the apical sinus of the fifth ventral rather narrow, scarcely more than a third as wide as the sinus, broadly sinuato-truncate throughout its width at apex, its lateral angles well marked and rectangular, its sides short, rectilinear and parallel; surface with an arcuate series of long and widely spaced bristles at some distance before the process but otherwise unmodified; fimbriate sides of the segmental sinus distinctly curved, each having

about eight black spinules. Length 3.5 mm.; width 0.65 mm. California (near San Francisco) ..... **gulare** n. sp.

Body nearly similar in form and coloration to the preceding, the head and abdomen blackish, the elytra brighter rufous and less clouded; head finely, less closely punctate, similar in form but with the eyes evidently larger, more obviously wider than the prothorax, the latter very distinctly wider than long, nearly parallel at the sides, the angles moderately rounded; elytra about as long as wide, a third wider and three-fifths longer than the prothorax; gular sutures broadly arcuate and slightly impressed, nearly as in *gulare* in form, the under surface of the head more coarsely, closely and subscabrously punctate. Median process of the fifth segment broader, nearly half as wide as the sinus, its apex truncate, becoming only just visibly sinuate toward the middle, its lateral angles rather broadly rounded and with the sides becoming parallel only at the base; fimbriate sides rather strongly curved, each with about six or seven porrect black spinules, surface with a sparse arcuate series of bristles before the process. Length 3.4 mm.; width 0.65 mm. California (probably the middle coast region) .. **distans** n. sp.

19 — Head narrow, somewhat longer than wide and not wider than the prothorax in the female, the sides long, straight and parallel behind the moderately developed eyes, the basal angles moderately rounded. Body slender, the anterior parts finely, sparsely punctured and polished, piceous-black, the abdomen blackish, the elytra paler and brownish-rufous; prothorax only just perceptibly wider than long, nearly parallel and straight at the sides, the angles rather broadly rounded; elytra relatively much smaller than usual, about a fourth wider and scarcely one-half longer than the prothorax, scarcely as long as wide; under surface of the head polished, finely, sparsely punctured and convex, the gular sutures parallel and straight through the greater part of their extent and distinctly impressed. Male unknown. Length 4.0 mm.; width 0.65 mm. California (San Francisco) ..... **luctuosum** Csy.

Head perceptibly wider than the prothorax in both sexes, rather wider than long, the sides parallel and straight behind the eyes, the basal angles moderately broadly rounded 20

20 — Smaller species, pale flavo-testaceous in color, more or less feebly clouded with piceous — notably on the posterior parts of the abdomen. Head only very slightly wider than the prothorax, finely, not densely punctate; prothorax rather large and well developed, notably wider than long and unusually strongly obtrapezoidal in form, the angles narrowly rounded; elytra rather small, quadrate, a fifth wider and about one-half longer than the prothorax; gular sutures straight. Median process of the fifth ventral short, about two-fifths as wide as the sinus, the latter relatively somewhat smaller and deeper than usual, the process very feebly, almost evenly sinuate at apex, its lateral angles narrowly rounded and with its sides parallel at base; fimbriate sides strongly curved and having unusually coarse black spinules; surface without the arcuate series of bristles before the process but clothed with very coarse black hairs throughout. Length 3.4 mm.; width 0.6 mm. California (Siskiyou Co.) ..... **pallescens** n. sp.

Larger species, piceous-black, the prothorax and elytra rufo-piceous, the

legs and antennae pale. Head distinctly wider than the prothorax in the female, the eyes only moderately developed and rather smaller than in the female of *pallescens;* prothorax relatively smaller, scarcely more than just visibly wider than long, subparallel and nearly straight at the sides, the angles rounded; elytra relatively larger, somewhat longer than wide, fully a third wider and three-fifths longer than the prothorax, not paler in color than the latter; under surface of the head rather flat and somewhat strongly and closely punctate, the gular sutures fine, scarcely at all impressed, nearly straight and just visibly converging to a short distance from the base, the intersutural region paler in color. Length 4.0 mm.; width 0.72 mm. California (Sta. Cruz Co.).....**conforme** n. sp.

21 — Body slender, black, the anterior parts with a slight piceous tinge, scarcely at all paler on the elytra; head and prothorax polished, finely, sparsely punctate, the former rather wider than long, only slightly wider than the prothorax, parallel and nearly straight at the sides behind the unusually small eyes, the basal angles moderately broadly rounded; prothorax as long as wide, the apex oblique at each side of the neck, the apical angles broadly obtuse; elytra quadrate, almost one-half wider and longer than the prothorax; under surface of the head broadly convex, rather strongly but sparsely punctate, the gular sutures very fine, almost obliterated, wholly unimpressed and sensibly converging nearly to the base, where they are more narrowly separated than in any of the preceding species of this section. Median process of the fifth ventral very narrow but rather long, about a fourth as wide as the sinus, deeply sinuate at apex with its sides straight and nearly parallel and the angles acute; fimbriate sides of the segmental sinus long, very feebly curved, each with about ten or eleven unusually long black spinules. Length 3.5 mm.; width 0.6 mm. California (Sta. Clara Co.).
gregale Csy.

Body shorter and relatively less slender, the elytra scarcely picescent, the legs brown; surface shining, the abdomen dull; head very finely, not very densely punctured, as long as wide, evidently wider than the prothorax, the sides behind the rather small eyes parallel and broadly, distinctly arcuate, the basal angles broadly rounded; prothorax nearly as in the preceding but with the sides of the apex less oblique and more rounded and the obtuse apical angles more broadly rounded; elytra two-fifths wider and one-half longer than the prothorax, scarcely longer than wide; under surface of the head convex, polished, rather finely, sparsely punctate, the gular sutures fine, but slightly impressed, gradually and feebly converging nearly to the base almost as in *gregale.* Median process of the fifth ventral distinctly more than a third as wide as the sinus, deeply and evenly sinuate at apex from side to side, its angles acutely rounded and less than right, its sides straight and diverging thence to the base; fimbriate sides very feebly curved; surface having some long bristles before the process at each side of the middle, nearly as in *gregale.* Length 3.2 mm.; width 0.6 mm. California (Sta. Cruz to San Francisco).....**mimulum** Csy.

Body very slender, dark rufo-piceous in color, the elytra piceous, the legs paler; surface rather shining, finely, sparsely punctate, the elytra and

abdomen more densely and subasperately punctate and duller; head small, narrow, as long as wide, scarcely perceptibly wider than the prothorax, the sides parallel and straight behind the rather small eyes, the angles well rounded; prothorax nearly as in *gregale* but with the obtuse apical angles more rounded; elytra somewhat longer than wide, about one-half wider and longer than the prothorax; under surface of the head rather finely and sparsely punctate, moderately convex, the gular sutures almost straight and parallel throughout the greater part of their extent, noticeably more deeply impressed and more widely separated than in either of the preceding species. Median process of the fifth ventral very large, fully one-half as wide as the sinus, deeply sinuate throughout its width at apex, with the angles narrowly rounded and rather less than right, its sides parallel to the base; fimbriate sides rather short, very slightly curved, each with about eight spinules; surface of the segment just before the process with a large uniserial cluster of very long close-set inclined bristles at each side of the middle. Length 2.9 mm.; width 0.55 mm. California (Los Angeles Co.).

debile n. sp.

22 — Head about as wide as the prothorax or just visibly wider..... 23

Head very small, narrower than the prothorax..... 27

23 — Body in great part dark piceous or blackish in color; gular sutures moderately separated..... 24

Body testaceous in color throughout..... 26

24 — Head closely punctured and rather dull in lustre. Body piceous in color, the elytra and prothorax paler, sometimes dark testaceous with the head blackish; legs pale; head just visibly wider than the prothorax, a trifle smaller in the female, minutely, closely punctate, parallel and virtually straight at the sides behind the rather small eyes, the basal angles only moderately rounded; prothorax well developed, much less punctate than the head and more shining, very slightly wider than long, slightly obtrapezoidal in form, the angles rounded; elytra quadrate, barely a third wider and one-half longer than the prothorax; under surface of the head rather closely punctate, rufous in color. Median process of the fifth ventral somewhat more than two-fifths as wide as the sinus, evenly and moderately sinuate in circular arc throughout its width, its angles right and but slighly blunt, its sides diverging thence to the base; fimbriate sides of the segmental sinus feebly curved, each with about eight black spinules; surface before the process with a transverse straight line of coarse and well spaced inclined black bristles at each side of the middle. Length 3.9 mm.; width 0.72 mm. California (Lake Tahoe).....**tahoense** n. sp.

Head sparsely punctured and polished 25

25 — Piceous in color, the head blackish, the elytra and legs paler and testaceous; head somewhat wider than long, parallel and nearly straight at the sides behind the rather well developed eyes, about equal in width to the prothorax, the basal angles well rounded; prothorax distinctly wider than long and evidently obtrapezoidal, with the sides nearly straight, the angles narrowly rounded; elytra nearly as in *tahoense*; under surface of the head rather flat, moderately closely punctured, the gular sutures fine, feebly converging to about the

middle of the post-oral surface, where they are separated — as in the preceding species — by distinctly less than the maximum width of the third palpal joint. Median process of the fifth ventral two-fifths as wide as the sinus, moderately sinuate at apex in somewhat parabolic form, the sinus not extending quite to the side angles, which are right and but little rounded, its sides feebly diverging and straight thence to the base; fimbriate sides of the segmental sinus as in *tahoense*, the transverse discal lines of inclined bristles less developed. Length 3.8 mm.; width 0.73 mm. California (Truckee and Lake Tahoe)..... **montanum** n. sp.

Piceous, though paler in color than the preceding, the head blackish and the elytra paler, the legs pale flavo-testaceous; head equal in width to the prothorax — even a little narrower in the female, parallel and straight at the sides behind the rather well developed eyes, the basal angles rather broadly rounded; prothorax distinctly obtrapezoidal with the sides nearly straight, obviously wider than long; elytra quadrate, a fourth to fifth wider than the prothorax; under surface of the head sparsely punctate, the gular sutures even less widely separated than in the two preceding species, and not at all impressed. Median process of the fifth ventral nearly as in *montanum* but somewhat wider, the fimbriate sides rather shorter and more strongly curved, the discal rows of bristles nearly similar. Length 4.0 mm.; width 0.7 mm. Idaho (Coeur d'Alène)..... **boreale** n. sp.

26 — Moderately slender, larger in size, somewhat shining throughout, the punctures only moderately close-set on the head which is generally a little darker in color, very slightly wider than the prothorax, parallel and straight at the sides behind the rather small eyes and with well rounded basal angles; prothorax well developed, evidently obtrapezoidal and wider than long; elytra relatively rather small in size, a fifth wider and two-fifths longer than the prothorax; under surface of the head strongly, moderately closely punctate, the gular sutures rather strongly convergent, becoming parallel at about the middle of the post-oral surface, where they are separated by but little more than half the width of the third palpal joint, strongly impressed. Median process of the fifth ventral but little less than one-half as wide as the sinus, which is rather deep, its apex feebly sinuate in circular arc throughout the width, its angles right but well rounded, its sides diverging thence to the base; fimbriate sides moderately curved but less widely diverging than usual, each with some eight or nine black spinules. Length 4.4 mm.; width 0.75 mm. Arizona (Williams),— Mr. Wickham.

arizonicum n. sp.

27 — Body small and moderately slender, piceous, the head blackish, the flanks and apex of the elytra broadly and nubilously pale testaceous, the legs pale as usual; surface shining throughout but with the punctures, even of the head and pronotum, close-set and minute; head small, about as wide as long, parallel and straight at the sides for a short distance behind the unusually large eyes, the basal angles broadly rounded; prothorax large, but just visibly wider than long, the sides subparallel and nearly straight, the angles rounded; elytra well developed, quadrate, a third wider and not quite one-half longer than the

prothorax; under surface of the head convex, black, shining, though rather closely punctulate, the gular sutures well impressed, widely separated, gradually converging nearly to the base of the head where they are separated by three-fourths of the maximum width of the third palpal joint. Male unknown; sixth ventral segment of the female strongly angulate at apex. Length 3.0 mm.; width 0.62 mm. Arizona (Pinal Mts.), — Mr. Wickham..... **pinalicum** n. sp.

The species of *Paramedon* will prove to be very numerous, being also abundant in individuals as a rule, and, as the males seem to be as well represented as the females, it generally happens that male characters are at hand for use in identification. All of the species here described are represented by males except four, viz.: *apacheanum*, *luctuosum*, *conforme* and *pinalicum*, and these are sufficiently distinct in other ways by reason of well marked divergencies, either in structure or habitat, to render them easy of identification; *conforme* and *luctuosum* are, however, mutually rather closely related. In some parts of the series the species become closely allied and will require care and study in identification, as for example in the case of *boreale* and *montanum*, which may be distinguished from each other by some noticeable differences in the male sexual characters, as well as by the more sparsely punctate under surface of the head in the former. In general the species are smaller than those of *Medon* and are equally monotonous in general appearance.

Medonodonta n. gen.

This genus and the succeeding are distinguished from those which precede in the group having the labrum bidentate, by the size and prominence of the teeth, which are very acute and project so far as to be conspicuous with an ordinary hand lens; they also have the neck somewhat narrower than usual, notably so in the present genus, the single representative of which may be defined as follows:—

Slender, parallel and distinctly depressed, alutaceous in lustre and pale and uniform red-brown in color throughout; punctures obsolete except toward the side of the head and on the elytra, where they are very minute; head well developed, wider than long, the sides parallel and broadly, evenly arcuate, with the basal angles more than right but not

rounded, the base truncate, becoming feebly sinuate in median third, the eyes at between three and four times their length from the base; antennae rather slender, filiform, with the joints elongate, about three-fourths longer than the head; prothorax strongly obtrapezoidal, slightly wider than long, only just visibly narrower than the head, the sides broadly and evenly arcuate, the angles obtuse but not much rounded; elytra very slightly longer than wide, just visibly narrower than the prothorax but rather distinctly longer, the sides subparallel and broadly, feebly arcuate, broadly rounding into the base; abdomen widest at the middle where it is as wide as the head and slightly wider than the elytra, the sides broadly and evenly arcuate. Length 4.3 mm.; width 0.68 mm. New Mexico..... **alutacea** n. sp.

The gular sutures are moderately widely separated, gradually and arcuately converging posteriorly and most narrowly separated basally; they are notably and very broadly impressed. The single type is a female and has lost all its legs.

Oxymedon n. gen.

In general facies the single known representative of this genus departs widely from *Medonodonta*, differing in form, convexity and sculpture to a notable degree, as well as in the much more approximate and scarcely at all impressed gular sutures. It may be described as follows:—

Body rather stout, parallel and convex, strongly shining, the punctures of the head not very coarse but strong and well separated, those of the prothorax scarcely smaller but notably feebler and rather less close-set, those of the elytra somewhat coarse and very strong, nearly like those of the head but sparser; color bright and uniform pale testaceous throughout, the head sometimes feebly picescent; head almost as long as wide, parallel and nearly straight at the sides, the angles broadly rounded, the eyes at a little less than three times their own length from the base, the latter becoming gradually transversely truncate toward the middle; antennae moderately slender and notably elongate, as long as the head and prothorax together, scarcely perceptibly and very gradually enlarged distally; prothorax slightly narrower than the head, as long as wide, the sides subparallel or just visibly convergent from apex to base and broadly arcuate, the angles all broadly rounded; elytra quadrate, parallel, and feebly arcuate at the sides, a fifth wider and one-third longer than the prothorax, rather wider than the head; abdomen parallel with the sides straight, not quite as wide as the head. Length 4.8 mm.; width 0.85 mm. California (Sisson and Truckee), — Mr. Wickham..... **rubrum** n. sp.

The male sexual characters are nearly as in the California species of *Medon*, the fifth segment being unmodified and the

sixth having a large, evenly and almost semicircularly rounded sinus, occupying virtually the entire apex and between two and three times as wide as deep, with its contour unmodified.

Tetramedon n. gen.

The labrum in this genus is remarkably similar to that of *Polymedon*, but in every other respect the two genera are altogether unlike, besides inhabiting quite different faunal provinces. The gular sutures in *Tetramedon* are moderately separated anteriorly, converging gradually to the base of the head, where they are very narrowly separated and are well impressed throughout. The single species known thus far is the following: —

Rather stout, parallel, somewhat depressed, moderately shining, black or piceous-black, the elytra bright rufous, except a large basal cloud near the scutellum, which is piceous, the legs and antennae pale red-brown; head well developed, wider than long, the sides parallel and broadly arcuate, the angles broadly rounded, the punctures not very coarse but deep and very close-set, mingled with larger circular punctures bearing stiffer setae; eyes at somewhat more than twice their own length from the base; antennae rather long and thick, subequal in length to the head and prothorax together; prothorax oblong, as long as wide, less than four-fifths as wide as the head and punctured like the latter but more finely and feebly, the sides straight and subparallel or just visibly convergent from apex to base, the angles obtuse and distinctly, though not very broadly rounded; elytra large, parallel, with slightly arcuate sides and well marked basal angles, which are widely exposed at base, distinctly longer than wide, slightly wider than the head, two-fifths wider and about one-half longer than the prothorax, moderately strongly and closely punctured; abdomen about as wide as the head, parallel, the sides just visibly arcuate, densely punctulate. Length 4.0 mm.; width 0.8 mm. New York (Hudson Valley).....**rufipenne** n. sp.

The unique type of this interesting species is a female, but the male secondary characters are probably of the usual simple form.

Platymedon Csy.

This genus was proposed by the writer some years ago to include a peculiar myrmecophilous Paederid of moderate size, somewhat depressed and of broadly parallel form, with char-

acters as stated in the table. Since then another member of the genus has occurred, and a specimen was kindly sent to me by Mr. Wickham as having been collected in eastern Nevada. The two species may be identified as follows: —

Stout, depressed, the sides slightly arcuate in general form, pale brownish-testaceous throughout, the head and abdomen rather darker; head and prothorax smooth, shining and subimpunctate, becoming finely punctulate and subscabrous broadly toward the sides, the elytra evenly, closely, minutely and asperately punctate; head much wider than long, somewhat transversely oval in form, the sides being parallel and broadly arcuate, the angles broadly rounded and the base transversely arcuate, the eyes moderately well developed, the sides and frontal regions bristling with a few black setae; antennae slender, as long as the head and prothorax in the male, shorter in the female; prothorax three-fifths wider than long, the sides just visibly converging from the very broadly rounded apical angles to the more obtuse but less rounded basal angles and nearly straight, distinctly wider than the head, the rounded contour of the apical angles having three or four long black bristling setae and the basal angles marked by another similar bristle; elytra much wider than long, slightly wider than the prothorax and about one-half longer, the sides strongly diverging and broadly arcuate from the rounded and scarcely at all exposed basal angles; apical margin conjointly broadly and angularly sinuate, the side margins without trace of bristling setae; abdomen short and broad, as wide as the elytra, the segments short and broad with the side margins rather thick, having numerous long bristling setae toward tip. Length 4.0 mm.; width 1.0 mm. Northern Illinois, Iowa (Iowa City) and Nebraska (West Point) ..... **laticolle** Csy.

Stout but more parallel, moderately depressed, pale red-brown throughout, the head and abdomen somewhat more piceous; elytra and prothorax alutaceous, finely but strongly, extremely densely and evenly punctate throughout, the latter with only vestiges of a narrow smooth median line, the head more shining, more coarsely, deeply and less closely punctured but evenly so throughout, except a narrow smooth median line, the abdomen finely, densely punctulate as usual; head but little wider than long, the sides much longer than in *laticolle* and nearly straight, the angles less broadly rounded and the base moderately arcuate; antennae longer and relatively stouter, as long as the head and prothorax even in the female; prothorax only just visibly wider than the head, about a third wider than long, the sides subparallel and feebly arcuate, the apical angles right and scarcely or only very narrowly rounded, the basal more broadly so, the bristling setae subobsolete; elytra about as long as wide, slightly wider than the prothorax and three-fifths longer, the sides diverging from the base and nearly straight, the apex only feebly sinuate; abdominal setae toward tip short. Male unknown. Length 4.6 mm.; width 0.9 mm. Nevada (Elko) ..... **nevadicum** n. sp.

The male secondary characters in *laticolle* are of a simple nature, the fifth ventral being unmodified, or only just visibly and broadly sinuate, and the sixth having a simple rounded sinus of moderate depth and about a third as wide as the apex. In *nevadicum* the outer labral teeth are relatively smaller and at a greater distance from the inner than in *laticolle*.

Medonella n. gen.

The single minute species, for which this generic name is proposed, is remarkable in having a type of antenna somewhat recalling *Sciocharis*, those organs being short, with the basal joint rather stout and of the usual length, the second short and less stout and the third and following still smaller and more slender; but the outer joints increase rather rapidly in size, the eleventh being about as stout as the first and the setae, though bristling, are very much shorter. It is also peculiar in that the rather widely separated gular sutures are completely effaced. The type of *Medonella* may be described as follows: —

Parallel, moderately convex and slender, polished throughout and pale rufo-testaceous, the abdomen slightly darker or picescent; punctures of the head fine, simple and sparse, of the pronotum still finer and sparser, of the elytra rather coarse, asperate and not close-set and of the abdomen unusually coarsely and sparsely asperate; head well developed, wider than long, parallel and straight at the sides, the angles right and but narrowly rounded, the base transversely truncate, becoming sinuate in the middle; antennae scarcely a third longer than the head in the female; eyes rather small but unusually convex; prothorax feebly obtrapezoidal, slightly wider than long, just visibly narrower than the head, the sides nearly straight and the angles rather obtuse, the anterior scarcely at all rounded; elytra small, about equal to the prothorax in length and width, the sides obviously diverging from the scarcely rounded basal angles and almost straight; abdomen at the middle rather wider than the elytra and fully as wide as the head, of the usual length, the sides parallel and very feebly arcuate; legs rather short. Length 1.8 mm.; width 0.3 mm. Florida (Biscayne Bay).
minuta n. sp.

The two specimens before me are females, the male being unknown as yet. The labral teeth are very difficult to observe, but the outer seem to be not only smaller than the

inner but short and very broadly obtuse. It is probable that other species of this genus will occur in Cuba and elsewhere in the Caribbean region.

Oligopterus Csy.

Although possessing a distinct habitus, the very small and slender species of this genus are closely allied to *Caloderma*, having similarly four minute labral teeth, the two inner — at each side of the median sinus — less minute than the two outer, the widely separated and feebly defined arcuate gular sutures mutually most approximate well before the middle of the under surface of the head and the anterior tarsi slender, filiform and not at all dilated but only slightly thickened, even in the male. The genus differs, however, in the very small elytra, which never exceed the prothorax in length, in the minute eyes, shorter metasternum and coarser sculpture of the abdomen above and beneath. The species are few in number, widely distributed over nearly the same geographical regions as *Caloderma* and are even more closely allied among themselves than the members of that genus; the species in fact resemble each other so closely that, were it not for the much more widely separated gular sutures of *remotus*, I would be disposed to consider them all as subspecies of a single generic type. The four forms in my cabinet may be outlined as follows:—

Gular sutures separated by a minimum distance equal to about a seventh of the total width of the head, the latter well developed, as wide as long, somewhat wider than the prothorax, the sides parallel and straight, the angles rectangular and but slightly rounded; punctures small but strong, moderately close-set; prothorax obtrapezoidal, slightly wider than long, the anterior angles distinct, the punctures strong and similar to those of the head; elytra distinctly shorter than wide, equal in width to the prothorax and not quite as long, the sides feebly diverging from the base, the punctures close, strong and asperate; abdomen as wide as the elytra, finely, densely and asperately punctate; color dark rufo-piceous, the elytra darker and the abdomen black, the legs and antennae dark red-brown. Length 2.6 mm; width 0.4 mm. California (San Francisco) ..... **remotus** n. sp.

Gular sutures similarly fine, feeble, arcuate and unimpressed but more approximate, mutually distant at their point of minimum separation by about a twelfth of the width of the head 2

2 — Body as in *remotus* but somewhat more slender, similar in coloration and sculpture, the head not distinctly wider than the prothorax, with the parallel sides slightly arcuate and the basal angles more broadly rounded; prothorax fully as long as wide, strongly obtrapezoidal with the angles distinct; elytra and abdomen as in *remotus* but still narrower. Length 2.7 mm.; width 0.4 mm. California (San Francisco to Sta. Cruz.). **cuneicollis** Csy.

Body as in *cuneicollis* in coloration and sculpture but still more slender, the head slightly wider than the prothorax with the sides parallel and broadly, feebly arcuate, the basal angles scarcely rounded; prothorax as long as wide, strongly obtrapezoidal, the sides broadly arcuate; elytra equal to the prothorax in width and length, fully as long as wide, the sides diverging as usual, the basal angles rounded; abdomen as wide as the elytra, and, as usual, half as long as the body. Length 2.5 mm.; width 0.38 mm. California (Mokelumne Hill, Calaveras Co.), — Dr. Blaisdell..... **filum** n. sp.

Body as in the preceding species but a little stouter than *filum*, pale rufotestaceous with the legs and antennae concolorous, the abdomen piceous; surface more polished, with the punctures a little sparser and more feeble; head slightly wider than the prothorax, parallel and feebly arcuate at the sides, the basal angles distinctly rounded; prothorax very nearly as long as wide, only moderately obtrapezoidal, the angles slightly rounded; elytra rather flattened, not quite as long as wide or as long as the prothorax but as wide as the latter, the sides almost parallel but broadly arcuate. Length 2.5 mm.; width 0.4 mm. Montana (western), — Mr. Wickham..... **flexilis** n. sp.

The male sexual characters are constant throughout the genus, as in *Caloderma*, and consist solely of a triangular notch, with its angle somewhat blunt or narrowly rounded and situated at the apex of the sixth ventral segment. The notch is smaller than in *Caloderma*, relatively deeper and more triangular.

Caloderma Csy.

Although widely separated in some characters, such as the dilated anterior tarsi of the male and absence of labral dentition, there can be no question that *Pseudomedon* is the nearest relative of *Caloderma*. The general form of the body, and, more particularly, the small head, are the same in both genera, but the gular sutures are much more widely separated in the former. The species of *Caloderma* are numerous, confined entirely to the regions west of the crest of the Rocky Mountains and are difficult to separate in some cases, which is also the condition in *Pseudomedon*, — a smaller but very

widely distributed genus. The species may be assigned to two groups based upon the sculpture of the prothorax, but those of the first group are mutually so closely allied, or at least similar in general appearance, that I prefer for the present to regard them as varietal modifications of a single species. The following table contains all the species now known to me: —

Prothorax densely sculptured with fine anastomosing longitudinal rugae.2
Prothorax with distinctly defined punctures, very rarely exhibiting traces of a longitudinally rugulose sculpture.....3

2 — Body subparallel, rather slender, dull in lustre, black or piceous-black in color throughout, the legs and antennae also dark; head distinctly narrower than the prothorax, as wide as long, the sides parallel and nearly straight, the basal angles rounded; eyes at about twice their own length from the base, the punctures rounded and distinct, relatively rather coarse and very dense; prothorax fully as long as wide, the sides parallel and broadly, evenly arcuate, the angles all broadly rounded; elytra much longer than wide, parallel, a fourth wider and two-thirds longer than the prothorax, very minutely but strongly, asperately and densely punctate; abdomen parallel, slightly narrower than the elytra, more shining than the anterior parts and sculptured in wavy transverse lines of excessively minute and close-set asperulate punctules; under surface of the head moderately strongly but rather sparsely punctured, the gular sutures arcuate, feeble, widely separated and distant at their most approximate point — which is well before the middle — by the maximum thickness of the third palpal joint. Sixth ventral of the male with a small rounded sinus at tip, the fifth unmodified. Length 3.3-4.0 mm.; width 0.6-0.65 mm. California (Sonoma to Los Angeles Co.).....**rugosa** Csy.

Var A — Similar to the above but a little stouter and more evenly parallel, black, the prothorax, elytra, legs and antennae paler, brown; prothorax distinctly wider than long, less obviously wider than the head, more transversely truncate at apex, with the anterior angles more narrowly rounded; elytra large, much longer than wide but only a fifth or sixth wider than the prothorax; eyes larger than in *rugosa* and situated at less than twice their length from the base; gular sutures strongly arcuate, very feeble, at their closest point separated by much less than the maximum thickness of the third palpal joint. Length 3.6 mm.; width 0.65 mm. California (Sonoma and Calaveras Cos.).....**semibrunnea** n. var.

Var B — Similar to *rugosa* but smaller and rather more slender, the prothorax more truncate at apex and with narrowly rounded angles; gular sutures more approximate, nearly as in *semibrunnea*; color black throughout. Length 3.3 mm.; width 0.55 mm. California (San Mateo Co.).....**angulata** Csy.

Var C — Smaller and rather more slender than *rugosa*, dark brown in color with the pronotum, elytra, legs and antennae still paler; elytra

not quite so elongate; punctures of the head rather less dense; gular sutures as in *angulata*. Length 3.1 mm.; width 0.55 mm. California (San Diego).....**continens** Csy.

3 — Elytra always much longer than the prothorax..... 4

Elytra only very slightly longer than the prothorax, not longer than wide.13

4 — Species very large and stout, the gular sutures broadly, feebly arcuate, approximate and distinctly impressed, black throughout, the legs and antennae brown, the elytra pale at apex; head rather coarsely, closely and normally punctate, scarcely visibly narrower than the prothorax, parallel and straight at the sides, as wide as long, the basal angles unusually broadly rounded; eyes normal, at about twice their own length from the base; neck rather less than two-fifths as wide as the head; prothorax somewhat strongly convex, finely, feebly, rather sparsely punctured and shining, a little wider than long, very slightly obtrapezoidal with the angles very broadly rounded; elytra large, quadrate, a fourth to nearly a third wider than the prothorax and one-half longer, very minutely, closely punctate. Sixth ventral of the male with the usual broadly rounded apical sinus. Length 5.2 mm.; width 0.9 mm. California (Los Angeles Co.).....**pollens** n. sp.

Species moderate or small in size and of slender form, the gular sutures more arcuate, more widely separated and not or scarcely at all impressed; elytra longer than wide, parallel..... 5

5 — Pronotum black; species generally somewhat larger in size..... 6

Pronotum pale in color; species frequently very small..... 11

6 — Elytra black or blackish, paler only at tip..... 7

Elytra pale throughout.....10

7 — Head distinctly narrower than the prothorax..... 8

Head subequal in width to the prothorax or never more than just perceptibly narrower..... 9

8 — Prothorax much wider than long, parallel and broadly, feebly arcuate at the sides, finely but deeply, very closely punctured and rather dull in lustre, the angles moderately rounded; body much larger and distinctly less slender in form; head as wide as long, parallel and straight at the sides, very closely, rather coarsely punctured; elytra large, longer than wide, nearly a fourth wider and three-fifths longer than the prothorax. Length 3.4–3.9 mm.; width 0.6–0.68 mm. California (middle coast regions).....**mobilis** Csy.

Prothorax only very slightly wider than long, slightly obtrapezoidal in form with the anterior angles but little rounded, finely and strongly but less densely punctate; body small and very slender, more parallel than in *mobilis*, the elytra being narrower when compared with the head and prothorax; head rather strongly but much more sparsely punctate; elytra a fifth wider and one-half longer than the prothorax. Length 3.0 mm.; width 0.5 mm. California (middle coast regions).....**reducta** Csy.

9 — Body rather stouter, nearly as in *mobilis* but smaller in size and more shining, the punctures distinctly less dense; head as wide as long, parallel and straight at the sides, the basal angles only slightly rounded, right; prothorax slightly wider than long, the sides just visibly converging from apex to base, the apical angles well rounded; elytra a fourth wider and fully three-fifths longer than the prothorax. Length

3.4–3.6 mm.; width 0.52–0.62 mm. California (Lake and Humboldt Cos.) ..... **luculenta** Csy.

Body narrower and more parallel, more slender and rather smaller in size; head nearly as in *luculenta;* prothorax but slightly wider than long, rather distinctly obtrapezoidal in form, the apical angles but little rounded; elytra relatively smaller and narrower than in *luculenta*, but very slightly wider and one-half longer than the prothorax. Length 3.2 mm.; width 0.5 mm. Nevada (Reno), California (Truckee), Washington State (Spokane) and Idaho (Coeur d'Alène) .... **peregrina** n. sp.

10 — Body relatively rather stout, parallel, black and somewhat shining, the elytra, legs and antennae castaneous-brown; punctures minute and close-set, coarser and more widely separated on the head, the latter well developed, as long as wide, but slightly narrower than the prothorax, parallel and straight at the sides as usual, the basal angles narrowly rounded; prothorax much wider than long, slightly obtrapezoidal, the angles distinct; elytra well developed, nearly a fourth wider and three-fifths longer than the prothorax. Length 3.3 mm.; width 0.62 mm. Nevada (Carson City), — Mr. Wickham ..... **conjux** n. sp.

11 — Sides of the prothorax parallel, broadly and feebly arcuate. Body rather slender, parallel, moderately shining, black, the prothorax piceo-castaneous, the elytra still paler, especially so broadly toward tip; head noticeably narrower than the prothorax, rather strongly and closely punctured as usual, fully as long as wide, parallel and straight at the sides; prothorax but very little wider than long, minutely punctate, the angles less rounded than in *mobilis;* elytra about a fifth wider and three-fourths longer than the prothorax, parallel. Length 3.5 mm.; width 0.68 mm. California (middle coast regions) ..... **contracta** Csy.

Sides of the prothorax more or less feebly convergent from the apical angles to the base; head as wide as the prothorax or somewhat wider; species smallest of the genus, slender 12

12 — Body black, the pronotum and elytra uniform and pale castaneous-brown, the latter only slightly paler at the extreme tip, the legs and antennae still paler; integuments shining; head as wide as the prothorax or just visibly narrower, as long as wide, shining, the punctures distinctly separated; prothorax almost as long as wide, the angles all well rounded; elytra but little longer than wide, nearly a fourth wider and barely one-half longer than the prothorax; abdomen somewhat wider than the prothorax. Length 3.0 mm.; width 0.6 mm. California (Humboldt Co.) to Washington State (Spokane) ..... **discolor** n. sp.

Body black, the pronotum piceous, the elytra blackish-piceous, paler at the apices especially toward the sides; surface feebly shining; head large for the present genus, somewhat wider than the prothorax, coarsely and not very densely punctate, fully as wide as long, parallel and straight at the sides; prothorax small, almost as long as wide, the angles rounded, the sides only just visibly convergent; elytra distinctly longer than wide, fully a fourth wider and three-fifths longer than the prothorax, finely but strongly, not very densely punctured. Length 2.75 mm.; width 0.55 mm. California (Sta. Clara Co.) ..... **tantilla** Csy.

Body pale testaceous throughout, the elytra still paler and more flavate and the abdomen piceous; surface rather shining; head well developed,

equal in width to the prothorax, as wide as long, straight and parallel at the sides, the basal angles rather broadly rounded, the punctures fine and somewhat sparse; prothorax a little wider than long, feebly obtrapezoidal, the angles moderately rounded, the punctures not conspicuous; elytra but little longer than wide, a fourth wider and one-half longer than the prothorax, rather strongly punctured, shining, the sides feebly diverging from base to apex. Length 2.9 mm.; width 0.53 mm. California (southern), — Mr. Fall.....**mollis** n. sp.

Body very slender, parallel, piceous-black, the prothorax, legs and antennae dark testaceous, the elytra piceous-black, pale and subflavate in apical third or fourth; head rather wider than the prothorax, not densely punctate, shining, of the usual outline; prothorax rather small, inconspicuously punctured, feebly obtrapezoidal, the angles rather well rounded, somewhat wider than long; elytra narrow and much elongated, a fifth wider and three-fourths longer than the prothorax, rather strongly and closely punctured but distinctly shining as in the preceding. Length 2.6 mm.; width 0.45 mm. California (southern), — Mr. Fall.....**exilis** n. sp.

13 — Parallel, moderately stout, black, the head piceous, the prothorax, elytra, legs and antennae pale brown, the elytra still paler and more flavate at the apical margin; surface somewhat dull in lustre; head well developed, rather wider than long, equal in width to the prothorax, parallel and very feebly arcuate at the sides, with the angles rather narrowly rounded, the punctures fine but strong and close-set; prothorax a little wider than long, feebly obtrapezoidal with the sides nearly straight and the angles moderately rounded, the surface punctured like the head but still more densely; elytra not distinctly wider than the prothorax and scarcely a third longer, the sides straight and feebly diverging from the base, densely and subrugosely punctured; abdomen but very slightly narrower than the elytra. Length 3.2 mm.; width 0.6 mm. California (Sisson), — Mr. Wickham.

brevipennis n. sp.

Parallel but somewhat less stout and less densely punctate, similar in coloration, except that the prothorax and elytra are darker and more piceous; lustre slightly shining; head narrower, rather longer than wide, slightly narrower than the prothorax, parallel and nearly straight at the sides, the basal angles rather more broadly rounded, the punctures coarse and well separated; prothorax as in *brevipennis* but with the angles more broadly rounded and the punctures smaller than those of the head and only moderately close-set; elytra equal in width to the prothorax and barely a fifth longer, quadrate, with the sides very feebly diverging from the base; abdomen equal in width to the elytra. Length 3.4 mm.; width 0.57 mm. British Columbia (Yale), — Mr. Wickham.

quadripennis n. sp.

The described species included in the table were originally made known by the writer (Bull. Cal. Acad. Sci., II, 1886) in an unsystematic manner and without adequate knowledge of their mutual affinities. The systematic arrangement of the

species is a difficult matter and is rendered still less satisfactory because of the complete lack of variety in the male sexual characters; to such an extent is this true that the statement of these characters under each species would be of little or no value, for even in the otherwise isolated *pollens*, the only abdominal modification is the usual moderately deep, broadly rounded sinus at the apex of the sixth segment, which characterizes the entire genus. In my original description of *tantilla*, the prothorax is said to be "scarcely perceptibly wider than the head," but this is evidently a mistake, as the head is obviously very slightly wider than the prothorax, — a very exceptional character in the genus, although more frequent among the minute slender forms. For the present I have placed with the type of *brevipennis*, a specimen taken by myself at Lake Tahoe, differing only in a few undecisive points, such as the rather less abbreviated elytra, and another specimen from Coeur d'Alène, Idaho, which is somewhat more slender in form, less densely punctate and also with less abbreviated elytra. It is more than possible that each of these represents a species distinct from *brevipennis*, but the material at hand is insufficient to warrant a description of them, especially as all my representatives of this peculiar group, comprising *brevipennis* and *quadripennis*, are females. There is, however, little or no observable difference between the male and female in external form in those species represented before me by both sexes.

Pseudomedon Rey.

In the European Catalogue of Heyden, Reitter and Weise, this genus is attached as a subgenus to *Medon*, with which it has no close affinity whatever. It is more evidently allied to *Caloderma* than to *Medon*, especially in the form and wide separation of the gular sutures, general facies of the body and small head, but differs from both in its edentate labrum, very minute and dense sculpture and strongly dilated anterior tarsi. The species are few in number but occur throughout the United States, as well as the palaearctic regions, the

American species before me being identifiable by the following characters: —

Addomen uniform in coloration and concolorous..... 2
Abdomen pale, with the tip black..... 6
2 — Body dark in color, the prothorax more or less distinctly norrower than the elytra, the latter fully as long as wide or somewhat longer..... 3
Body pale red-brown in color throughout, the head a little darker, the prothorax large, fully as wide as the elytra, the latter not as long as wide..... 5
3 — Prothorax pale, dull rufous in color; body more slender, black, the legs and antennae pale; dull in lustre throughout from the extremely minute, close-set punctules; head as long as wide, about three-fourths as wide as the prothorax, the sides behind the well developed eyes parallel and feebly arcuate, the basal angles broadly rounded; prothorax fully as long as wide, parallel and feebly arcuate at the sides, the angles broadly rounded; elytra about as long as wide, distinctly wider and longer than the prothorax. Length 4.0 mm.; width 0.65 mm. North Carolina (Asheville), New Jersey, New York and Rhode Island.

ruficolle n. sp.

Prothorax dark and concolorous; anterior tarsi of the male very strongly dilated..... 4
4 — Body parallel, black, dull in lustre, the prothorax never more than faintly piceous, black in maturity; elytra moderate, quadrate, only very slightly wider and about a fourth longer than the prothorax; head fully four-fifths as wide as the prothorax, rather wider at base than at the moderately developed eyes; prothorax relatively larger, but little wider than long, parallel. Length 3.3 mm.; width 0.7 mm. Massachusetts.

thoracicum n. sp.

Body less parallel, the elytra relatively larger; black and dull throughout, the legs dark piceous; head very small, three-fourths as wide as the prothorax, nearly as in *ruficolle;* prothorax slightly wider than long, parallel and feebly arcuate at the sides, the angles rounded; elytra quadrate, fully a fourth wider and two-fifths longer than the prothorax. Length 3.75 mm.; width 0.75 mm. Nevada (Reno), California (Lake Tahoe) and Oregon (Albany)..... **capitulum** Csy.
5 — Body, legs and antennae pale testaceous, the head piceous; dull in lustre throughout, rather stout and parallel in form; head unusually large, as wide as long, of the usual form, about four-fifths as wide as the prothorax, the latter very large, just visibly wider than long, fully as wide as the elytra, parallel, the sides feebly arcuate, the angles broadly rounded; elytra depressed, a little shorter than wide, but very slightly longer than the prothorax. Male not known but probably still stouter. Length 3.2 mm.; width 0.65 mm. Rhode Island (Boston Neck).

clarescens n. sp.

6 — Moderately stout, parallel, alutaceous, the elytra dull; pale testaceous, the head, elytra and last two ventral segments black; legs and antennae pale, the latter unusually long, half as long as the body; head rather well developed, five-sixths as wide as the prothorax, otherwise as in

the preceding species; prothorax as long as wide, the sides feebly arcuate, just visibly convergent from apex to base, the angles moderately rounded; elytra relatively small, as long as wide, about equal in width and length to the prothorax, the sides very slightly diverging from the base. Length 2.8 mm.; width 0.6 mm. Alabama (Eufaula). **alabamae** n. sp.

The sexual characters are simple, the male, as in *Calloderma*, having a small rounded or more or less angulate sinus at the tip of the sixth segment, becoming decidedly larger and triangular in *alabamae*, and the anterior tarsi are more strongly dilated in that sex. Some of the Massachusetts specimens, described as *thoracicum* in the table, were sent to me by M. Sallé, under the name *obsoletum* Nord., and I have also taken it myself at Taunton, Mass. It differs from the true *obsoletum*, as represented by some Dalmatian examples sent me by Mr. Reitter, in its smaller size, relatively much larger prothorax and smaller elytra and in the deeper sinus of the sixth ventral of the male. The western *capitulum* resembles *obsoletum* much more closely in size and form, but has a deeper male sinus and relatively larger prothorax. The true *obsoletum* does not therefore occur in America, and its insertion in our catalogue is a result of careless and superficial comparative study, as has been the case in many other instances. Most of our faunistic catalogues are diminished considerably in value from this cause.

Lena Csy.

Although evidently allied to *Pseudomedon* by the structure of the labrum, gular sutures and hind tarsi, this genus departs widely in general facies, sculpture, in antennal structure and in its undilated anterior tarsi. The labrum is completely devoid of any trace of teeth but has a well developed median notch; the gular sutures are moderately separated at the front of the under surface of the head but thence gradually diverge widely to the base. The antennae are somewhat as in *Medonella*, being very short, with the third joint shorter and narrower than the second, the shaft gradually becoming notably thicker or clavate toward tip. The posterior tarsi are

moderately long, very slender and filiform, with the first four joints decreasing rapidly in length, the first almost as long as the next two combined, the fourth short, very oblique, extending slightly under the base of the fifth which is barely as long as the first and much more slender. The single widely disseminated species is not rare under old leaves and rubbish and may be defined as follows:—

Moderately stout, somewhat convex, parallel, pale flavo-testaceous throughout, sometimes feebly picescent beneath and on the abdomen; surface feebly alutaceous from a very minute reticulation, the elytra and abdomen rather more shining and sparsely punctate, the former somewhat coarsely and subrugulosely, the head and pronotum not finely but extremely feebly and subobsoletely punctate; head well developed, somewhat wider than long, the sides parallel and nearly straight, the angles right and rather narrowly rounded; eyes moderately large; antennae short, about a fourth longer than the head in the female; prothorax distinctly narrower than the head, slightly transverse, distinctly obtrapezoidal, the sides straight, the angles obtuse and moderately rounded; elytra large, quadrate, much larger than the head, a fourth wider and one-third longer than the prothorax, parallel, the sides nearly straight, the basal angles right, but slightly rounded and rather widely exposed at base; abdomen parallel with the sides feebly arcuate, fully as wide as the elytra, the segments short, the fifth longer as usual. Length 2.0 mm.; width 0.45 mm. Texas (Austin, Houston and Brownsville) and Florida (Enterprise).....**testacea** Csy.

The specimens in my cabinet are females and I am therefore unable to describe the male, the secondary sexual characters of which are presumably very simple.

Scopaei.

The moderately numerous genera of this subtribe are composed on the whole of the smallest and most delicate species of the Paederini. They are especially developed in the American continents and comparatively poorly represented in the palaearctic regions. Some of the American genera are notable because of the elaborate secondary sexual modifications of the male, which in several cases such as *Scopaeopsis*, affect every segment of the abdomen. In many instances these secondary sexual characters extend to the entire form or relative sizes of the head, prothorax and elytra, as in

Lathrobium. The genera known to me by actual examples may be defined as follows: —

Neck moderately narrow, varying from a fourth to nearly a third as wide as the head..... 2

Neck extremely slender..... 4

2 — Gular sutures parallel, broadly, feebly arcuate, moderately separated throughout but most approximate at the middle; labrum broadly truncate with the usual rounded median notch, bidentate or edentate; body parallel, moderately convex, always pale in color, the anterior thoracic angles distinct and subapical; tarsi moderately short, the posterior slender with the two basal joints subequal. Rocky Mountain regions. **Leucorus**

Gular sutures more or less widely separated, more arcuate and most approximate anteriorly, diverging thence gradually to the base; labrum distinctly quadridentate; hind tarsi short, moderately slender, with the basal joint but little longer than the second; body black or blackish, polished and more or less sparsely punctate..... 3

3 — Body thick and more convex, the legs thicker, the anterior tarsi dilated; thoracic angles broadly rounded and almost obliterated, the prothorax oval; labrum truncate; gular sutures distinct. Entire United States except the true Pacific coast fauna..... **Pycnorus**

Body slender, moderately convex, the legs slender; anterior tarsi not dilated though broader and thickened; prothorax oblong, the anterior angles more or less distinct; labrum rounded; gular sutures very feeble, sometimes nearly obliterated. Entire Pacific coast region..... **Orus**

4 — Posterior tarsi rather short, moderately thick, with the basal joint never more than slightly longer than the second, the anterior very feebly dilated; labrum rounded in outline, distinctly quadridentate, the teeth simple; body slender, parallel and moderately convex..... 5

Posterior tarsi long, very slender, with the basal joint always distinctly longer than the second, the anterior not or very feebly dilated; body subparallel, strongly convex, the prothorax oval with the anterior angles obtuse or subobliterated and far from the apex..... 6

5 — Body minute in size, variable in color, more or less alutaceous because of minute dense punctuation; prothorax suboblong, with the anterior angles more or less distinct; gular sutures moderately widely separated, most approximate anteriorly, gradually diverging thence to the base. Europe and America. [= *Leptorus* Csy.]..... **Scopaeus**

Body larger, black, polished, the punctuation less fine and rather sparse; prothorax oval, the anterior angles obliterated; gular sutures parallel, nearly straight, rather approximate throughout the length of the head. Entire northern United States..... **Scopaeoma**

6 — Body very minutely punctulate and pubescent; labrum broadly rounded, large, very coarsely quadridentate and deeply cleft at the middle, the inner teeth each with an internal denticle at base, or, unequally bifid; gular sutures virtually coalescent from a short distance behind the support of the mentum. Eastern United States..... **Scopaeopsis**

Body polished, subglabrous and subimpunctate, with sparse erect tactile setae; labrum broadly rounded, with the usual small median emargi-

nation, the inner teeth distinct, simple and aciculate, the outer very minute or subobsolete; gular sutures very fine, rather widely separated, feebly arcuate, most approximate slightly before the middle. Sonoran regions..... **Scopaeodera**

I have been unable to obtain specimens of the Mexican *Euscopaeus* Shp., or of the true *Polyodontus* Sol., for comparison. In the catalogue of Heyden, Reitter and Weise, the latter of these genera is made the receptacle for most of the European Scopaei, but I can find no structural difference between the species so listed and those which are held to represent the true *Scopaeus*. It is my recollection that *Polyodontus* Sol., is a genus differing distinctly from *Scopaeus* and inhabiting Chile, but I have no means of confirming this at present.

Leucorus n. gen.

The prothorax in this genus is more oblong and with more apical and strongly defined anterior angles than in any other type of American Scopaei, and, from all other genera except *Orus* and *Pycnorus*, it is distinguishable at once by the wider neck, which varies from nearly a fourth to almost a third as wide as the head. From *Pycnorus* it departs widely in habitus, owing to the distinct thoracic angles, and, from both *Orus* and *Pycnorus*, it differs radically in the form of the labrum and obsolete external labral teeth. The color of the body is always pale ferruginous, differing conspicuously from the uniform black or piceous of the genera mentioned, and the few known species are confined as far as known to the regions west of the Mississippi River, excepting probably the true Pacific coast fauna. The four species in my cabinet may be defined as follows: —

Elytra much longer and wider than the prothorax..... 2
Elytra subequal in length to the prothorax and but little wider..... 3
2 — Form rather stout, moderately convex, parallel, pale rufo-testaceous in color throughout the body, legs and antennae; lustre rather shining; head well developed, minutely, not densely punctate, slightly elongate, the eyes rather large but only feebly convex and not prominent, the sides behind them very feebly converging and just visibly arcuate to the broadly rounded basal angles, the truncate base obviously narrower than the width across the eyes; antennae evidently shorter than the head and

prothorax, rather slender but distinctly incrassate distally, the basal joint unusually elongate, nearly as long as the next three which diminish gradually in length; prothorax four-fifths as wide as the head, slightly longer than wide, the sides feebly converging from the obtuse and slightly rounded angles at apical fifth to the less obtuse and slightly rounded basal angles and straight, the punctures sparse and rather feeble but much larger than those of the head; elytra slightly longer than wide, distinctly wider than the head, a third wider and one-fourth longer than the prothorax, the sides very feebly diverging from the base, the punctures very fine and not close-set; abdomen but slightly narrower than the elytra, but little wider posteriorly than at base; gular sutures well separated, the intervening space with a small feeble impressed fovea just behind the mental support. Male with a deep elongate-oval excavation occupying median fourth of the fifth ventral, and having sharply defined side margins, extending to basal third or fourth, the excavation gradually narrowing and becoming obsolete near the base; bottom of the excavation flat and polished; posterior margin with a deep subquadrate notch, the sides of which are formed by obtuse prolongations of the sides of the excavation; sixth segment having a very deep and extremely narrow apical notch, acute at the bottom and three or four times as deep as wide. Length 3.3 mm.; width 0.7 mm. Arizona ....**ferrugineus** n. sp.

Form and coloration nearly similar to the preceding, the body narrower and the head and prothorax relatively smaller; head notably longer than wide, the eyes smaller than in *ferrugineus* but otherwise similar, the antennae more strongly incrassate distally; prothorax distinctly elongate, with the sides parallel, the anterior angles behind apical fifth and rather broadly rounded; elytra a third wider and longer than the prothorax, longer than wide; gular sutures well separated, the intermediate surface simple but more strongly micro-reticulate. Length 3.0 mm.; width 0.62 mm. Southern California.....**luridus** n. sp.

Form and coloration similar in general to the two preceding but with the prothorax relatively more developed and but just visibly narrower than the head, parallel at the sides, with the anterior and basal angles well rounded, the former at about apical fifth; sides of the head behind the well developed eyes more rapidly converging and broadly arcuate, the truncate base much narrower than the width across the eyes; antennae only very feebly incrassate; elytra but little longer than wide, slightly wider than than the head, a fourth wider and one-fifth longer than the prothorax. Length 3.4 mm.; width 0.65 mm. Colorado (Cañon City), — Mr. Wickham.....**ochrinus** n. sp.

3 — Body parallel, rather darker testaceous, the abdomen somewhat dusky; lustre rather shining; head well developed, scarcely at all longer than wide, fully as wide as the elytra, the sides behind the somewhat smaller eyes parallel for a short distance, then broadly rounding to the truncate base; prothorax small, much narrower that the head, slightly elongate, the sides rather strongly converging from the well rounded angles at apical fifth to the rounded basal angles and straight; elytra obviously wider than the prothorax but only just visibly longer; abdomen at base as wide as the elytra, becoming wider behind. Male having

the secondary sexual characters comparatively feeble but of the same type as those of *ferrugineus*, the fifth ventral having a feeble, very narrow longitudinal impression along the middle, gradually becoming extinct before the middle of the length and not more than a tenth or twelfth as wide as the segment, the posterior margin transversely truncate, with a very minute feeble sinus at the posterior end of the impression; sixth segment having a very narrow deep and angular notch, nearly three times as deep as wide. Length 2.9 mm.; width 0.68 mm. Iowa.....**rubens** n. sp.

A female from Iowa, apparently belongs to the male described as *rubens* above, but shows that the sexual differences in general form of the body are very marked, the head being much smaller in the female and only just visibly wider than the prothorax, and the abdomen is parallel or nearly so and distinctly more slender. *Luridus* and *ochrinus* are at present represented by the female alone, but the divergencies of these species from *ferrugineus*, which is represented only by the male, do not lie altogether in the direction of the sexual differences as observed in *rubens*, and there seems to be but little doubt of their validity.

Pycnorus n. gen.

The species of this genus are few in number, widely distributed over nearly the entire country, except perhaps the northern Pacific coast, and may be distinguished from *Orus* by their stouter form, shorter and stouter tarsi, the anterior more strongly dilated as a rule, more widely separated and stronger gular sutures, by the short and broadly truncate labrum, and, finally and more particularly, by the obliterated anterior thoracic angles. From *Leucorus* they are still more readily distinguished by this last character, as well as by the larger, truncate and bidenticulate to virtually edentate labrum of that genus. The male sexual characters are distinctive of the genus, as may be seen below under the description of the type species. The three forms known to me may be thus outlined:—

Form moderately stout, parallel, convex, shining, black throughout, the legs piceous with the tarsi somewhat paler; head minutely, not densely

punctate, the pronotum and elytra more coarsely but sparsely so, the abdomen very minutely, densely punctulate. Head moderate, rather longer than wide, the sides parallel for about a length of the eye behind the latter, then gradually rounded and converging to the sinuato-truncate base, which is only about three-fourths of the width at the somewhat well developed eyes; basal angles obtuse but only moderately rounded; antennae a little shorter than the head and prothorax, moderately thick, very feebly and gradually incrassate distally, the basal joint but little longer than the next two combined; prothorax large, oval, a third longer than wide, parallel and broadly arcuate at the sides, the latter arcuately converging anteriorly to the neck, relatively larger and almost as wide as the head in the male, distinctly narrower in the female; elytra slightly wider than the head and a fifth wider than the prothorax, slightly elongate, more obviously so in the female, equal in length to the prothorax in the latter and slightly shorter in the male; abdomen subequal in width to the elytra. Male having all the abdominal segments sparsely clothed with longer stiff bristles at each side of the broadly flattened median third, the bristles inclined inwardly, the second segment impressed in median third almost to the base, the impression smooth and polished posteriorly and more thickly bristling with stiff hairs elsewhere, its side margins rather tumid and prominent at and behind the middle and having a dense tuft of hairs at the middle anteriorly; third segment very feebly impressed basally; fifth with a narrow and very feeble median sinus; sixth having a large simple sinus at the middle of the apex, about three times as wide as deep, the surface in the middle feebly, longitudinally and narrowly impressed; femora all thick, the posterior broadly concave on the posterior face, the lower edge of the concavity feebly serrate — as is also the inner edge of the hind tibiae — and having a large tooth near the trochanter; anterior tarsi rather strongly dilated. Length 3.2 mm.; width 0.65 mm. Massachusetts.....**dentiger** Lec.

Form slightly more slender than in *dentiger* but nearly similar in size, form and sculpture; hind angles of the head less broadly rounded; prothorax distinctly narrower than the elytra, the latter comparatively more elongate than in *dentiger;* legs brown in color. Male characters substantially similar, excepting that the emargination of the sixth ventral is a little less broadly rounded, the inner sinuate margin of the hind femora slightly more serrate and the hind tibiae not serrate internally. California (Pomona).....**armiger** Fall

Form stouter and less convex than in *dentiger*, not parallel, shining, black, the legs and antennae piceous throughout; head dull in lustre, slightly elongate, the sides parallel for a short distaece behind the eyes, then broadly rounded into the base, the angles being much more broadly rounded at base than in *dentiger;* antennae slender, feebly incrassate; prothorax slightly though distinctly narrower than the head, parallel and broadly arcuate laterally, elongate-oval, more coarsely punctured than the elytra, the punctures sparse; elytra large, but slightly longer than wide, fully a fourth wider than the head, two-fifths wider than the prothorax and distinctly longer than the latter, subparallel and feebly

arcuate at the sides; sutural region broadly impressed throughout; abdomen parallel, obviously narrower than the elytra. Length 3.25 mm.; width 0.73 mm. Male unknown. Iowa..... **iowanus** n. sp.

There is a small, rounded and acutely pointed tubercle at the middle of the gular intersutural surface, just behind the oral cavity, which seems to be obsolete in the female of *dentiger*, but it is present in the unique female type of *iowanus*. The latter species is very distinct from the others in its much larger elytra and more broadly and evenly rounded basal angles of the head. The characters of *armiger* are taken from the original description of Mr. Fall.

Orus Csy.

The numerous species of this genus are of slender form and more or less shining surface, due to the sparse and coarser punctuation, they being distinguished from *Scopaeus* by this character as well as the broader neck and other features mentioned in the table. *Cervicula* constitutes a remarkable exception in regard to one of the most important structural characters distinguishing the genus from *Scopaeus* and several other genera of the group, the neck being very slender and precisely similar to that characterizing the genus mentioned. In all its other characters, however, it is a typical *Orus* and *cervicula* cannot, therefore, be held to unite *Orus* with *Scopaeus*. In geographical range *Orus* is confined to the regions bordering the Pacific Ocean, not penetrating eastward, as far as known, further than the crest of the Rocky Mountain divide. The species are larger and stouter than those of *Scopaeus*, which — if we except a small aberrant form recently named *Leptorus longipennis*, by Mr. Fall, — does not form a part of the true Pacific coast fauna. The species known thus far may be defined as follows:—

Neck of the usual width, nearly a third as wide as the head..... 2
Neck very slender as in *Scopaeus*.....14
2 — Prothorax elongate, never more than slightly shorter than the elytra.. 3
Prothorax invariably very much shorter than the elytra..... 5
3 — Sides of the prothorax, from the obtusely rounded apical angles to the base, distinctly converging and straight. Body very slender, black

throughout, the legs and antennae brown, alutaceous because of very minute reticulation, the elytra shining; head well developed, scarcely longer than wide, parallel and broadly arcuate at the sides, the angles broadly rounded, the base truncate; surface very finely and closely punctate throughout; antennae not as long as the head and prothorax, with joints two to four decreasing slightly in length; prothorax much longer than wide, distinctly narrower than the head, the obtuse rounded anterior angles situated at apical fourth or fifth; surface more coarsely and unusually closely punctured throughout, the median line feebly elevated toward base; elytra but little longer than wide and only about a fifth longer than the prothorax, though fully two-fifths wider, parallel, finely but strongly, asperately punctate; abdomen parallel and elongate, wider than the head; gular sutures fine but evident, somewhat widely separated, the intervening space more strongly and coarsely micro-reticulate than the remainder of the surface. Male unknown. Length 3.5 mm.; width 0.5 mm. California (Lake Tahoe) ..... **longicollis** n. sp.

Sides of the prothorax parallel or not distinctly converging, nearly straight, the obtusely rounded apical angles more anterior, at about apical fifth or sixth 4

4 — Larger species, parallel in form, dark rufo-piceous in color, except the head and abdomen which are blackish; surface moderately shining, the micro-reticulation of the anterior parts evident but feeble; head well developed, slightly longer than wide, throughout nearly as in *longicollis*, the antennae nearly as long as the head and prothorax, with joints two and three equal in length, the fourth shorter; prothorax unusually large, but little, though evidently, narrower than the head, a third longer than wide, the punctures rather coarse and unusually close-set throughout but not very deep; elytra but little longer than wide, parallel, very finely and rather closely punctate, barely a fifth longer than the prothorax and nearly one-half wider; abdomen much narrower than the elytra though obviously wider than the head; gular sutures nearly as in *longicollis*. Male unknown. Length 3.3 mm.; width 0.68 mm. California (Napa and Sonoma Cos.) ..... **parallelus** Csy.

Smaller in size, shining, the micro-reticulation scarcely traceable, black in color throughout, the legs and antennae piceous; head well developed, scarcely visibly longer than wide, nearly as in the preceding species in form, the minute but deep punctures rather less close-set; antennae shorter than in *parallelus*, distinctly shorter than the head and prothorax, with joints two to four gradually decreasing in length as usual; prothorax relatively smaller, much narrower than the head, the punctures larger than those of the head as usual but fine, sparse and notably feeble; elytra only just visibly longer than wide, with the sides very feebly diverging from base to apex, about a fifth longer and two-fifths wider than the prothorax, finely, not very densely punctate; abdomen but little narrower than the elytra and much wider than the head; gular sutures nearly as in the preceding. Male unknown. Length 3.0 mm.; width 0.6 mm. Idaho (Coeur d'Alène), — Mr. Wickham.

boreellus n. sp.

5 — Prothorax subequal in width to the head, rather larger in size than in *punctatus*, nearly black in color and of rather robust form. Fifth ven-

tral of the male feebly sinuato-truncate and very slightly impressed, the sixth triangularly emarginate, the notch much less deep than in *punctatus* and with its diverging sides not at all sinuate posteriorly, its apical angle somewhat less than right and but slightly rounded. California (San Bernardino Mts.). ..... **montanus** Fall

Prothorax always distinctly narrower than the head 6

6 — Head unusually developed, as wide as long or very nearly so —estimating from the line of supra-antennal tubercles 7

Head narrower, more or less distinctly longer than wide 8

7 — Color pale piceous-brown, the head and abdomen blackish; form rather stout, the surface shining, the micro-reticulation subobsolete; head large, fully as wide as long, the eyes well developed, the sides behind them parallel and straight, the basal angles broadly rounded, the punctures minute but deep, moderately close-set; antennae moderate; prothorax small, much narrower than the head and about equally long, only a little longer than wide, the sides very feebly converging from the obtuse but distinct apical angles to the base and broadly feebly arcuate, the punctures coarse, sparse and rather strong; elytra parallel, about a fifth longer than wide, two-fifths wider and nearly one-half longer than the prothorax, wider than the head, finely and not densely punctured; abdomen much narrower than the elytra and scarcely wider than the head. Male sexual characters of the *punctatus* type, the notch of the sixth ventral being similar, the fifth segment having a broad median lobe which is evenly rounded throughout its contour and shorter than in *punctatus*, the surface strongly, longitudinally impressed in about apical half. Length 3.2 mm.; width 0.6 mm. California (Sonoma Co.). **sonomae** n. sp.

Color uniform pale piceous-brown throughout, except the head and abdomen which are black; surface of the head and pronotum alutaceous, the fine reticulation strong; head well developed, scarcely visibly elongate, the eyes rather large, the sides behind them parallel and straight only for a very short distance, then rounding into the very broadly rounded basal angles, the punctures very minute and sparse; prothorax relatively larger and more elongate than in *sonomae*, though distinctly narrower than the head, about a fourth longer than wide, subparallel and nearly straight at the sides, the obtuse though scarcely rounded apical angles at about a fifth of the length from the apex, the punctures moderately large but sparse and extremely feeble, almost completely obliterated; elytra distinctly elongate, parallel, two-fifths wider and a little less than one-half longer than the prothorax, moderately strongly, subasperately and not very densely punctate. Male unknown. Length 2.9 mm.; width 0.55 mm. Washington State (Spokane). **pugetanus** n. sp.

Color deep black throughout, the legs piceous-black, the tarsi and antennae paler, rufous; surface strongly shining, the reticulation obsolescent; head large, very nearly as wide as long, the eyes only moderately large, the sides behind them parallel for a rather long distance, the angles somewhat broadly rounded; antennae rather short, gradually thicker toward tip; punctures fine, very deep and close-set throughout; prothorax somewhat distinctly narrower than the head, slightly longer

than wide, parallel and just visibly arcuate at the sides, the apical angles obtuse and one-fifth from the apex, the punctures rather coarse but very sparse, distinct though not deep; elytra large, parallel, only a fifth or sixth longer than wide, fully one-half wider and longer than the prothorax, finely, sparsely and not asperately punctate and strongly shining; abdomen much narrower than the elytra and very distinctly wider than the head; gular sutures extremely feeble, unusually widely separated and but slightly diverging toward base, the intervening space feebly reticulate like the remainder of the surface. Male unknown. Length 3.4 mm.; width 0.65 mm. California (Lake Tahoe).

robustulus n. sp.

8 — Body pale brownish-piceous in color throughout, the head and abdomen but slightly darker; surface highly polished and without trace of minute reticulation on the pronotum; form narrow, the head notably narrow and elongate, the eyes only moderate in size, the sides behind them parallel for a long distance, the basal angles broadly rounded, the punctures minute, rather close-set toward the sides and base; prothorax parallel, nearly a fourth longer than wide, with all the angles about equally rounded, obviously narrower than the head, somewhat coarsely but feebly and sparsely punctate; elytra notably elongate, parallel, one-half wider, and about two-fifths longer than the prothorax, finely, feebly and not very densely punctate; gular sutures very fine, rather widely separated, diverging also toward base as usual, the intermediate surface apparently in slight relief and more shining and less reticulate than the remainder. Male secondary characters nearly as in *punctatus*, the truncate lobe of the fifth segment still larger. Length 2.75 mm.; width 0.5 mm. California (Humboldt to Sonoma Co.).....**pallidus** n. sp.

Body black or piceous-black in color..... 9

9 — Elytra gradually paler posteriorly..... 10

Elytra uniformly colored, either black or piceous, concolorous.....11

10 — Form nearly as in *punctatus*, the prothorax relatively shorter and the elytra longer, black in color, the legs blackish with the tarsi paler, the elytra gradually and very nubilously rufescent toward tip; surface shining, the reticulation subobsolete on the pronotum; head of the usual form, the eyes well developed, the punctures fine but unusually strong; antennae moderate, with joints two to four decreasing rapidly in length; prothorax unusually small, sparsely and very feebly though more coarsely punctate, only slightly longer than wide, parallel and straight at the sides, distinctly narrower than the head, the obtuse anterior angles at apical fourth or fifth; elytra unusually elongate, parallel, one-half wider and three-fifths longer than the prothorax; gular sutures moderately separated, very fine, the intermediate surface apparently somewhat concave, more shining and less reticulate than the remainder of the under surface. Male unknown. Length 3.0 mm.; width 0.63 mm. Arizona (Pinal Mts.).....**pinalinus** n. sp.

Form rather shorter, black, the legs piceous-black, the tibiae and tarsi gradually paler, brown, the elytra gradually very nubilously piceous toward tip, especially toward the suture; surface polished with the reticulation obsolete; head as in the preceding species, slightly elon-

gate, parallel for a long distance behind the eyes to the broadly rounded angles; prothorax distinctly longer than wide, obviously narrower than the head, subparallel and nearly straight at the sides, rather coarsely, sparsely and only moderately strongly punctate; elytra unusually short, but little longer than wide, the sides very feebly diverging from the base, becoming slightly arcuate posteriorly, about one-half wider than the prothorax but only about a third longer, finely, feebly and rather sparsely punctate; gular sutures moderately separated but obliterated, the intermediate surface not differing materially from the remainder. Male unknown. Length 2.9 mm.; width 0.55 mm. California (Humboldt Co.).....**deceptor** n. sp.

11 — Male with the posterior margin of the fifth ventral segment lobed in the middle.....12

Male with the posterior margin of the fifth segment not distinctly lobed..13

12 — Body rather slender, deep polished black throughout, the legs blackish with the tibiae and tarsi gradually paler; reticulation obsolete; head distinctly elongate, with broadly rounded sides basally, the base truncate, the punctures minute but perforate as usual, rather sparse; prothorax very distinctly narrower than the head and obviously longer than wide, more coarsely but sparsely and more or less strongly punctate, parallel and nearly straight at the sides, the apical angles broadly rounded and more than a fifth from the apex; elytra distinctly elongate, parallel, large, about three-fifths wider and longer than the prothorax; gular sutures rather less widely separated than usual and almost completely obliterated. Male with the fifth segment strongly lobed at the middle, the lobe much wider than long, about a fourth as wide as the segment and broadly, transversely truncate at apex, the adjoining surface ovally and somewhat feebly impressed in apical half, the sixth segment with a large angulate notch, somewhat deeper than wide and narrowly rounded anteriorly, with its diverging sides feebly sinuate posteriorly, the surface of the segment narrowly and feebly impressed around and in front of the angle. Length 2.8–3.0 mm.; width 0.5–0.6 mm. California (Truckee, Sonoma and Monterey), Nevada (Reno), Oregon (Albany, Newport and the Dalles) and at various localities in Washington State. **punctatus** Csy.

Body nearly as in *punctatus* but more slender and very much smaller, deep polished black throughout, the entire legs and antennae more or less pale brown; head nearly as in *punctatus* but not quite so elongate, the prothorax relatively still narrower and more elongate, as long as the head but much narrower, the sides parallel and straight, the punctures sparse and feeble; elytra relatively narrower and more elongate, parallel, about two-fifths wider and longer than the prothorax, shining and finely, rather sparsely punctate. Male with the secondary characters nearly as in *punctatus*, the lobe of the fifth segment smaller, though equally strong, and not more than a fifth as wide as the segment, more rounded and less truncate at apex, the surface more strongly and cylindrically impressed almost to the base of the segment; notch of the sixth segment almost similar but with its anterior angle rather less narrowly rounded. Length 2.6 mm.; width 0.4 mm. California (Mokelumne Hill, Calaveras Co.), — Dr. Blaisdell.....**filius** n. sp.

Body moderately slender, deep and shining black throughout, the femora and tibiae blackish, the tarsi and antennae paler, brown; reticulation subobsolete; head as usual, the eyes very well developed; prothorax distinctly longer than wide, much narrower than the head, the sides subparallel and nearly straight, sparsely punctulate, the anterior angles about a fifth from the apex and broadly rounded; elytra notably elongate, one-half wider and longer than the prothorax; gular sutures obliterated, rather widely separated, the intermediate surface polished and smooth, the feeble reticulation of the remainder of the surface being obsolete. Male secondary characters of the sixth segment nearly as in *punctatus*, the hind margin of the fifth having a very short, broadly and evenly rounded lobe in median fifth or sixth, the surface not impressed but having a feeble rounded tumor on the median line at apical third. Length 2.7 mm.; width 0.53 mm. California (Sta. Cruz and San Mateo Cos.). **distinctus** n. sp.

13 — Notch of the sixth segment large, deep and angulate as in *punctatus*, the segment also feebly impressed in front of the emargination as in that species; fifth segment broadly, feebly sinuato-truncate and feebly impressed. Body slender, black or piceous-black in color, shining; head of the usual form, parallel, the antennae gradually and distinctly thickened toward tip; prothorax much narrower than the head, distinctly elongate, parallel, the anterior angles broadly rounded and at apical fourth or fifth, the punctures sparse and feeble; elytra parallel, distinctly elongated, two-fifths wider but only about a third longer than the prothorax; gular sutures fine but evident, moderately separated, the intermediate surface plane and not differing in sculpture. Length 2.75 mm.; width 0.5 mm. California (Pomona and San Bernardino). **fraternus** Fall

Notch of the sixth segment in the form of a broadly rounded simple sinus, wider than deep. Body piceous-black, the abdomen black, the legs brown throughout, shining, the head and pronotum finely but distinctly reticulate, the punctures sparse and almost completely obsolete, those of the elytra fine and sparse; head but slightly elongate, the antennae more slender than in *fraternus* and scarcely visibly incrassate distally; prothorax but little longer than wide, much narrower than the head, parallel, the anterior angles broadly rounded and at apical fourth or fifth; elytra distinctly longer than wide, parallel, one-half longer and wider than the prothorax; gular sutures well separated but almost wholly obliterated, the intermediate surface but little smoother than the remainder and becoming broadly concave toward base. Male with the fifth segment broadly, feebly impressed along the middle throughout the length, the apical margin transversely truncate, with a narrow and very feeble arcuation at the middle but scarcely lobed; sixth segment with a broad rounded sinus between two and three times as wide as deep, the surface adjoining anteriorly with a triangular impression having abruptly defined side margins. Length 2.7 mm.; width 0.5 mm. California (Siskiyou Co.) ..... **shastanus** n. sp.

14 — Rather slender, deep polished black throughout, the reticulation of the head and pronotum wholly wanting, the legs and antennae pale brown, the femora dusky; head scarcely at all longer than wide, of the usual

form and sculpture, the antennae slender and only just visibly incrassate distally; prothorax obviously narrower than the head and distinctly longer than wide, the nearly straight sides just perceptibly converging from the broadly and obtusely rounded anterior angles — at apical fourth or fifth — to the base; elytra convex, polished, finely, sparsely punctured, only very slightly longer than wide, not quite one-half wider and only about a fourth longer than the prothorax; gular sutures subobliterated. Male with the fifth segment wholly unimpressed, the apex broadly, feebly sinuato-truncate; sixth segment with a rounded sinus between two and three times as wide as deep, the adjoining surface feebly impressed in the middle, the impression gradually evanescent anteriorly. Length 3.0 mm.; width 0.5 mm. California (Dunsmuir), — Mr. Wickham..... **cervicula** n. sp.

Fifth segment of the male lobed in the middle at apex and longitudinally impressed, the impression longitudinally divided at base by a short median raised line and becoming posteriorly a spoon-shaped depression, limited at the sides by acutely elevated folds; sixth ventral with a deep oblong-elliptical emargination, which is widest at the middle of its depth, the surface in front of the emargination with a triangular impression having abruptly limited side margins; hind femora stouter than usual and fully as broad as the anterior. California (Marin Co.).

femoratus Fall

I am obliged to place *femoratus* at the end of the table, as no characters are given under the original description enabling me to coördinate it with the other species. Its sexual characters are so distinct that there will be no trouble in identifying the male if found. *Robustulus* closely resembles *punctatus* but is larger and stouter and has the legs notably stouter. A specimen from Truckee, before me, may possibly represent the *montanus*, of Fall, but it seems to be rather smaller, being 2.8 by 0.55 mm. in size, the prothorax obviously narrower than the head, although less so than in most of the species, and the triangular notch of the sixth segment is wider than deep, with its anterior angle well rounded, the transversely rounded part being about a fourth as wide as the entire notch. *Pallidus* has male sexual characters greatly resembling those of *punctatus*, but the less abruptly truncate lobe of the sixth segment is relatively still larger, being nearly a third as wide as the segment and the gular sutures are more widely separated; these characters, in conjunction with the smaller size and different coloration, will readily distinguish the two

species, which are both represented by good series. In the type specimen of *punctatus* there is a small and feeble tumidity on the surface between the gular sutures just behind the support of the mentum, which is probably homologous with the subspiniform process, in the same position, generally characterizing *Pycnorus;* it seems to be an inconstant character in *Pycnorus* and is extremely rare in *Orus* and probably of sporadic or accidental occurrence, as I have only noticed it in this single specimen out of many examined.

Scopaeus Er.

Renewed comparisons of the European and American species — the latter separated by the writer under the name *Leptorus*,— impels him to reverse his former opinion and to unite these with *Scopaeus*. The genus *Scopaeus* will thus include all the European Scopaei and the equally numerous American species, as described in the table given below, as well as a number of Mexican and Central American species made known by Dr. Sharp; possibly also many forms inhabiting other parts of the world. Thus extended in geographical distribution, as well as numbers, some variability in generic characters might be anticipated but this seems to be comparatively unimportant. The European species are more linear and parallel, with less apical anterior thoracic angles, as a rule, than the American and with the suture separating the pronotal hypomera better developed; in addition the basal joint of the hind tarsi is generally more decidedly longer than the second. In the American species the basal joint is usually subequal to the second, but in *picipes* it is notably longer than the second as in the European forms, and, in at least one European species before me, the two basal joints are equal. The sculpture of the European species is generally coarser and less dense than that of the American, but I can find no character of sufficient importance or constancy to warrant generic separation. The large spongy-pubescent fovea immediately above each eye is present throughout but rather more developed in the European species. It is singular

that representatives of so widely distributed a genus should be wanting in the true Pacific coast faunal region of the United States, if we except the extreme southern part of California, and this is rather conclusive evidence that the genus migrated from America to Europe, or the reverse, by way of Greenland, rather than by the usual Alaskan route and probably indicates a European rather than American origin. The species inhabiting our territory, known to me thus far, may be distinguished by the following outline descriptions:—

Elytra subequal to or longer than the prothorax.....2
Elytra more or less distinctly shorter than the prothorax.....18
2 — Male with a subparallel-sided, narrow notch at the apex of the sixth ventral segment, the bottom of the notch broadly and transversely rounded..... 3
Male with a broad emargination occupying virtually the entire apex of the sixth segment, the notch having the form of an incised cusp, the widely diverging sides of the emargination being broadly arcuate 4
3 — Form parallel, the lustre feebly shining, pale brownish-testaceous throughout, except the elytra, which are dusky and the abdomen blackish-piceous; head moderate, convex, slightly longer than wide, the sides parallel and straight behind the well developed convex eyes; base broadly sinuato-truncate, the angles rather narrowly rounded; occiput not impressed, the punctures minute but deep, dense; prothorax distinctly though not very greatly narrower than the head, about a fifth longer than wide, the anterior angles obtuse but very evident and at apical fourth, the sides thence very feebly converging and almost straight to the moderately rounded basal angles; surface more shining than the head, the very minute punctures feebler and less close-set, feebly bi-impressed at the basal margin; elytra nearly a fifth longer than wide, parallel, two-fifths wider and about a third longer than the prothorax, very minutely, closely, subasperately punctate; gular sutures well separated. Male with a small subparallel-sided notch somewhat deeper than wide at the apex of the sixth ventral, the bottom of the notch broadly rounded with the edge beveled or concave. Length 2.6 mm.; width 0.45 mm. Texas (El Paso) and New Mexico, — Mr. Wickham..... .....**texanus** Csy.
Form less parallel, the elytra relatively much wider, similar in coloration, the lustre alutaceous, the minute sculpture rather denser; head well developed, but little longer than wide, larger than in *texanus* but otherwise nearly similar; prothorax relatively smaller and narrower, much narrower than the head, fully a fifth longer than wide, similar to that of *texanus*, except that the basal angles are more broadly rounded and the two basal impressions more approximate; elytra subquadrate, parallel, only just visibly longer than wide, one-half wider than the prothorax but only about a fourth longer; gular sutures more approximate, the punctures of the under surface of the head denser and more

asperate. Male having a notch at the apex of the sixth ventral similar to that of *texanus* but much less deep, rather wider than deep. Length 2.8 mm.; width 0.5 mm. Arizona (Yuma), — Mr. Wickham.

gilensis n. sp.

4 — Occiput finely cleft at the middle of the base; anterior angles of the prothorax sometimes more rounded and less apical than usual; gular sutures narrowly separated..... 5

Occiput not modified at base or, rarely, slightly and broadly impressed at the middle; gular sutures more or less widely separated..... 6

5 — Body stout and parallel, very densely punctulate and dull in lustre, dark piceous-brown in color, the head rather darker, the legs and antennae very pale; head large, scarcely at all longer than wide, of the usual form otherwise, the eyes well developed and convex; antennae as long as the head and prothorax combined; prothorax slightly longer than wide, very much narrower than the head, parallel and nearly straight at the sides, the anterior angles obtuse but only very slightly rounded and somewhat behind apical fourth; elytra parallel, about a fifth longer than wide, scarcely two-fifths wider than the prothorax and one-third longer; gular sutures very approximate, the intermediate surface concave anteriorly, the under surface of the head flat, finely but strongly, extremely densely punctulate. Occipital cleft very fine. Male unknown. Length 2.4 mm.; width 0.5 mm. Alabama.

crassulus n. sp.

Body parallel but less stout and rather more convex, dark piceous-brown in color, the head and abdomen blackish, the legs and antennae pale throughout; head extremely densely punctured and dull, the pronotum and elytra less densely so and feebly shining; head nearly as in the preceding species, the eyes rather less developed and the antennae decidedly shorter, thicker and more incrassate distally, much shorter than the head and prothorax combined; prothorax narrower and more elongate, nearly a third longer than wide, much narrower than the head, the sides distinctly converging and feebly arcuate from the very obtuse and rather broadly rounded anterior angles — situated nearly at apical third — to the broadly rounded basal angles, the disk broadly impressed at each side of the median line toward base; elytra evidently longer than wide, about a third wider and one-fifth longer than the prothorax; gular sutures slightly less approximate, the intervening surface nearly flat. Occipital cleft rather coarse, deep and distinct. Male unknown. Length 2.7 mm.; width 0.45 mm. North Carolina (Asheville)..... **carolinae** n. sp.

6 — Eyes but slightly convex, not distinctly prominent and unusually small. Body very small, slender and parallel, rather shining, the punctures throughout very minute and sparse, the pronotum less shining because of stronger micro-reticulation; color pale flavo-testaceous throughout, the abdomen slightly dusky excepting toward apex; head narrow, unusually elongate, the sides parallel, gradually becoming arcuate basally, the base narrower than the disk, the angles obtuse but only slightly rounded; prothorax distinctly elongate, nearly as long as the head and only slightly narrower, the sides very feebly converging from the obtusely rounded anterior angles at apical fifth or sixth to the

rather broadly rounded basal angles and nearly straight; elytra small, only slightly longer than wide, but little wider than the head, about a fourth wider than the prothorax but only just visibly longer; pronotal hypomera very narrow and feebly developed. Male unknown. Length 1.9 mm.; width 0.32 mm. Texas (Austin).....**longiceps** Csy.

Eyes always convex and more or less conspicuously prominent..... 7

7 — Elytra much longer than the prothorax..... 8

Elytra but slightly longer than the prothorax.....13

8 — Punctures of the under surface of the head rather coarse. Body very slender, piceous, the head and prothorax dark rufous, the legs and antennae paler; surface rather more shining than usual; sides of the prothorax slightly converging from the anterior angles; elytra fully one-third longer than the prothorax. Length 2.2 mm. California (Pomona).....**longipennis** Fall

Punctures of the head above and beneath very fine as usual..... 9

9 — Legs piceous in color, the tarsi paler. Body subparallel, the elytra much wider than the head, black or blackish throughout, the antennae dusky; integuments strongly alutaceous; head moderately developed, of the usual form, the basal angles well rounded; prothorax distinctly longer than wide and narrower than the head, subparallel at the sides, the anterior angles rather broadly rounded and at apical fourth; elytra obviously longer than wide, parallel, two-fifths wider and fully a fourth longer than the prothorax, parallel and nearly straight at the sides, the suture frequently finely rufous; gular sutures only moderately separated. Length 2.3 mm.; width 0.45 mm. Sea-beaches of New Jersey, Florida (Biscayne Bay) to Texas (Galveston).....**picipes** Csy.

Legs invariably very pale in color throughout.....10

10 — Body in great part piceous or blackish in color.....11

Body pale testaceous, the abdomen sometimes dusky.....12

11 — Body larger and subparallel, the elytra much wider than the head, the elytra and abdomen throughout black or blackish, the head and prothorax very dusky and dark rufo-testaceous, the elytral suture generally somewhat rufescent; lustre feebly shining; head well developed, somewhat distinctly longer than wide, the basal angles well rounded, the eyes prominent and conspicuous; antennae rather slender, much shorter than the head and prothorax combined; prothorax evidently elongate and narrower than the head, the sides subparallel and nearly straight, the anterior angles obtuse and slightly rounded and at apical fourth; elytra distinctly longer than wide, two-fifths wider and about a fourth longer than the prothorax; gular sutures moderately separated. Notch of the sixth male ventral notably deep. Length 2.6 mm.; width 0.45 mm. Arizona (Tucson) and Texas (Austin and Waco).

arizonae n. sp.

Body parallel, the elytra being only slightly wider than the head, feebly shining, piceous-black throughout, except the prothorax, which is somewhat dusky rufo-testaceous, and the outer apical angles of the elytra, which are nubilously pale; head rather large, not longer than wide, of the usual parallel form and with somewhat narrowly rounded basal angles, the antennae, as usual, much shorter than the head and prothorax; eyes prominent but only moderate in size; prothorox only

very slightly longer than wide and but little narrower than the head, parallel and straight at the sides from the obtuse and slightly rounded angles at apical fifth to the rather broadly rounded basal angles, the longitudinal impression at each side of the median line in basal third distinct; elytra somewhat longer than wide, about a third wider and one-fourth longer than the prothorax; gular sutures rather widely separated, the under surface of the head broadly and feebly convex, shining, finely, rather sparsely punctulate. Male secondary characters as in *arizonae*. Length 2.4 mm.; width 0.4 mm. Iowa to Lake Superior.

notangulus n. sp.

12 — Form slender and parallel, the elytra being but little wider than the head; abdomen piceous, gradually paler at tip; surface noticeably shining, the minute punctules only moderately close-set throughout; head well developed, as wide as long, parallel or subparallel at the sides, the eyes moderately large, convex and prominent, the base distinctly sinuato-truncate, the angles moderately rounded; antennae rather short; prothorax but little longer than wide, obviously although not greatly narrower than the head, the sides distinctly converging and straight from the obtuse but scarcely at all rounded angles near apical fifth, to the feebly rounded basal angles, the median line slightly and obtusely elevated very near the base; elytra relatively small, slightly longer than wide, not quite a fourth wider and about one-fifth longer than the prothorax, the sides just visibly diverging from the basal angles; gular sutures widely separated, the under surface of the head sparsely punctulate and shining though feebly reticulate. Broadly angulate notch of the sixth male ventral much shallower than in the preceding species but of the same form. Length 2.1–2.4 mm.; width 0.3–0.35 mm. Texas (Austin). [= *bicolor* Csy.].....**versicolor** Csy.

Form less slender and not parallel, the elytra much wider than the head, pale dusky-testaceous throughout, the prothorax rather brighter rufous; surface somewhat strongly shining; head well developed, as wide as long, the eyes rather large, prominent; antennae slender, but little shorter than the head and prothorax, pale in color; prothorax relatively small, notably elongate, much narrower than the head, the sides very slightly converging and not quite straight from the obtuse and rather broadly rounded angles near apical fourth, to the less obtuse but rounded basal angles, the median line prominent only very near the base; elytra unusually developed, a fourth longer than wide, about two-fifths wider and a third longer than the prothorax; gular sutures moderately separated, rather deeper than usual, the under surface of the head rather closely and strongly punctulate. Male unknown. Length 2.3 mm.; width 0.45 mm. New York (Hudson Valley).

hudsonicus n. sp.

13 — Species of the Atlantic coast regions.....14

Species of the Sonoran region.....17

14 — Head but little longer than wide, body only moderately slender.....15

Head elongate; body extremely slender.....16

15 — Body parallel, alutaceous in lustre, the abdomen black or blackish, feebly paler toward tip, the head and elytra blackish-piceous, the prothorax dusky testaceous, the legs and antennae pale throughout; head

of the usual form, very minutely, densely punctulate and rather strongly, more sparsely so beneath; antennae obviously shorter than the head and prothorax, the latter slightly longer than wide and usually but little narrower than the head, the sides subparallel or very feebly convergent from the obtuse and slightly rounded angles at apical fourth or fifth, the punctures less dense than those of the head; elytra not or but very slightly longer than wide, much wider than the head, parallel, about a fourth wider but only just visibly longer than the prothorax; gular sutures well separated. Length 2.4 mm.; width 0.4 mm. Rhode Island and New York (Hudson Valley).....**exiguus** Er.

Body resembling *exiguus* in coloration but smaller and rather more slender, alutaceous as usual, the punctures of the under surface of the head smaller and feebler; head, antennae and prothorax nearly similar, the elytra however relatively much narrower and only just visibly wider than the head, parallel, quite distinctly longer than wide, scarcely more than a sixth wider and but slightly longer than the prothorax, sculptured as usual. Length 2.3 mm.; width 0.35 mm. North Carolina (Asheville).....**macilentus** n. sp.

Body somewhat resembling the two preceding in form and sculpture but with the prothorax relatively narrower and more elongate; color pale flavo-testaceous throughout, the head but slightly, and the abdomen not at all, darker; head well developed, of the usual form; prothorax much narrower than the head and more shining, fully a fifth longer than wide, the sides behind the obtuse and rather broadly rounded angles at about apical fifth subparallel; elytra parallel, only very slightly longer than wide, but slightly though obviously wider than the head, fully a third wider but only just visibly longer than the prothorax. Male unknown. Length 2.3 mm.; width 0.38 mm. New York (Hudson Valley).....**degener** n. sp.

16 — Coloration as in *exiguus;* form parallel, the lustre alutaceous, the pronotum more shining as usual; head distinctly elongate, the eyes larger than usual and situated at obviously less than twice their own length from the base; prothorax much narrower than the head and distinctly elongate, the sides very feebly converging behind the obtusely rounded angles at apical fifth and nearly straight; elytra obviously though not greatly wider than the head, nearly a fifth longer than wide, parallel, about a fourth wider and slightly longer than the prothorax; gular sutures well separated as in the three preceding species. Male unknown. Length 1.8 mm.; width 0.3 mm. North Carolina (Asheville).
angustissimus n. sp.

17 — Slender, parallel, rufo-testaceous, the elytra and abdomen fuscous, the former with the suture narrowly and indefinitely paler; antennae and legs pale; lustre alutaceous, the pronotum more shining; head slightly longer than wide, of the usual form, densely punctulate; prothorax narrower than the head, a little longer than wide, with the sides behind the strongly obtuse and rounded subapical angles parallel; elytra about a fourth longer than wide, distinctly wider and slightly longer than the prothorax, sculptured as usual. Sixth ventral in the male rather deeply, triangularly emarginate, the emargination as wide

as deep and scarcely rounded at the bottom. Length 1.9–2.4 mm. California (Palm Springs — on the western border of the Colorado Desert).

californicus Fall

18 — Elytra only slightly shorter than the prothorax. Body slender, parallel, small in size, colored as in *exiguus* and similarly sculptured, the punctures of the rather convex under surface of the head less evident; head well developed, distinctly elongate, parallel at the sides, the convex eyes at twice their length from the base; antennae shorter than the head and prothorax, rather stout and only very feebly and gradually incrassate distally; prothorax much longer than wide, only just visibly narrower than the head, the sides subparallel behind the obtuse and slightly rounded angles at apical fifth; elytra scarcely visibly wider than the head, parallel, slightly elongate, distinctly wider and only very slightly shorter than the prothorax; gular sutures well separated. Length 2.0 mm.; width 0.32 mm. New York, Virginia (Fort Monroe) and Mississippi (Vicksburg).....**delicatus** n. sp.

Elytra very much shorter than the prothorax.....19

19 — Body extremely slender, pale ochreo-testaceous in color throughout; parallel in form, the lustre rather shining and only moderately alutaceous; abdomen faintly dusky except toward tip; head large, but little longer than wide, rather wider near the base than across the eyes, which are convex and at about twice their length from the base as usual; antennae rather thick, much shorter than the head and prothorax, distinctly incrassate distally; prothorax evidently elongate, much narrower than the head, the sides feebly convergent behind the obtuse and somewhat rounded angles, the latter near apical fourth; elytra very small, much narrower than the head, barely as long as wide, scarcely visibly wider than the prothorax and only about three-fourths as long, the sides feebly diverging from the basal angles; abdomen subequal in width to the elytra; gular sutures well separated. Notch of the sixth ventral in the male of the usual form though less deep than in *exiguus*. Length 2.4 mm.; width 0.38 mm. Iowa (Iowa City), — Mr. Wickham.

brachypterus n. sp.

Body notably stout, parallel, strongly alutaceous, the pronotum more shining.....20

20 — Color dark piceous, the abdomen blackish, the prothorax, legs and antennae dusky-testaceous; head large, not longer than wide, parallel, the eyes moderate and at fully twice their length from the base; antennae well developed, subequal in length to the head and prothorax, distinctly incrassate distally; prothorax stout and but little longer than wide though obviously narrower than the head, the sides feebly converging and somewhat arcuate behind the obtusely rounded angles at apical fourth; elytra about as long as wide, not quite as wide as the head, very slightly wider than the prothorax and about four-fifths as long; gular sutures well separated. Notch of the sixth ventral of the male normal in form. Length 2.6 mm.; width 0.48 mm. Alabama.

saginellus n. sp.

Color and general form nearly as in *saginellus*, the anterior parts and legs paler, the pronotum pale testaceous; head large, not longer than wide, the eyes well developed and at barely twice their own length from the

base; antennae very much shorter than the head and prothorax, slender and not distinctly incrassate distally; prothorax nearly as in *saginellus* but only very slightly narrower than the head, the anterior angles at apical fifth; elytra smaller, barely as long as wide, slightly narrower than the head, equal in width to the prothorax and barely three-fourths as long, the sides just visibly diverging from the base. Length 2.5 mm.; width 0.45 mm. Texas (Houston).....**quadripennis** n. sp.

A number of female types are included in the above table, but, as the parallel-sided notch of the sixth male ventral is a very exceptional character, all but *texanus* and *gilensis* are assumed to have the broad notch in the form of an acute incised cusp with broadly diverging and arcuate sides. In all the males having the latter type of emargination, which I have been able to examine, the form is very constant, varying only in degree, so that it is seldom mentioned in the descriptions, even when the male is at hand, and I have assumed that the triangular emargination of *californicus*, mentioned by Fall, is really of the same character, though in this case the notch appears to be somewhat deeper than usual. *Arizonae* seems to differ from *californicus* Fall, in its larger size and relatively less slender and parallel outline. *Notangulus* is closely allied to *exiguus* but is distinguished by the notably more elongate elytra, when compared with the prothorax. *Degener* is represented by a single specimen of a very unusual pale and uniform coloration, but exhibiting scarcely any other evidence of immaturity; it is distinguishable from *exiguus*, however, by its narrower and relatively more elongate prothorax. The last three species of the table are of remarkably aberrant form, owing to their very short elytra, but the male sexual characters are of the usual type. *Saginellus* and *quadripennis* are each represented by a single male, the species differing principally in the antennae, relative size of the elytra and prothorax, and, somewhat, in the eyes and relative form and degree of separation of the gular sutures. Both *longipennis* and *californicus* are unknown to me, and the above outlines are derived from the original diagnosis as published by Mr. Fall (Occas. Papers, Cal. Acad. Sci., viii).

Scopaeoma n. gen.

In a certain sense this genus and the two following form a group differing greatly from the broad-necked genera in some peculiarities of sculpture. In *Orus* and related genera, the punctures of the pronotum are very much larger as well as sparser than those of the head, while in *Scopaeoma*, *Scopaeopsis* and *Scopaeodera*, the thoracic punctures are, when present at all, equal to or smaller and sparser than those of the head; but in the first alone are they distinctly visible. In the second all the punctures become so minute as to be nearly invisible and entirely filled by the bases of the fine hairs constituting the pubescence, while in the last the punctuation becomes wholly lost and the surface glabrous. The present genus approaches *Scopaeus* more closely than the other two in the nearly parallel and less convex form of the body and in the much shorter and somewhat thicker tarsi, with a form of the prothorax nearly similar to that of *Pycnorus*. The species are moderately numerous and extend over the entire northern part of the continent from the Atlantic to the Pacific, those known to me being distinguished as follows: —

Head almost semicircularly rounded at base, smaller in size and relatively more elongate 2

Head large, broadly truncate at base, scarcely at all longer than wide ... 5

2 — Head distinctly wider than the prothorax 3

Head subequal in width to the prothorax, never more than very slightly wider 4

3 — Body slender, black, the legs pale brown throughout, the punctures fine and dense, less dense on the pronotum than on the elytra; head elongate, broadly concave between the antennal prominences. Male with a large oval concavity at the apex of the fifth ventral and a subquadrate emargination formed in part by short prolongations of the sides of the concavity, the floor of the concavity smooth, with a narrow, slender, posteriorly inclined, acutely attenuate spine, bearing at each side near its apex a short seta projecting laterally; sixth segment with a simple subparabolic sinus wider than deep and about a third as wide as the segment; middle tibiae somewhat abruptly thickened from behind the middle to the apex. Length 2.9 mm.; width 0.5 mm. Vancouver Island. **brunnipes** Lec.

Body parallel, rather convex, shining, black or slightly piceous in color, the legs piceous-black with the tarsi pale brown, the antennae dark brown;

pubescence throughout short, fine, decumbent and moderately abundant; head longer than wide, finely but strongly, closely punctate, the punctures especially dense toward base and sides; eyes rather small but convex and prominent, at more than twice their own length from the extreme base, the sides behind them parallel for a short distance, then broadly rounding into the semicircular base, which is somewhat subtruncate toward the middle especially in the female; front between the antennal tubercles broadly, strongly impressed; antennae slightly shorter than the head and prothorax, moderately slender, feebly incrassate, the cylindric basal joint much longer than the next two, the succeeding three decreasing slowly in length; prothorax nearly a third longer than wide, distinctly although not very greatly narrower than the head, widest near the middle, the sides subparallel and broadly arcuate, rapidly converging and becoming just visibly sinuate in anterior fourth to the very narrow neck, the punctures sparse, very fine, more distinct and feebly asperate toward base; elytra nearly a fourth longer than wide, very much wider than the head, two-fifths wider and a fourth longer than the prothorax, parallel, the punctures close-set, larger than those of the head and rather strongly asperate; abdomen parallel, slightly narrower than the elytra; legs moderately short and rather slender. Male with a broadly oval deep and distinctly though not acutely limited oval impression, occupying median third of the fifth ventral and extending almost to the base, its floor shining and having, posteriorly, a suberect acutely triangular process; posterior margin of the segment with a large, subquadrate emargination, the acute and subparallel sides of which are in great part formed by acute processes in prolongation of the sides of the impression, the emargination as deep as the length of the impression before it; sixth segment with a large oval impression having a flat floor, the apical margin with a simple rounded sinus about three times as wide as deep; middle tibiae nearly as in *brunnipes*. Length 3.2 mm.; width 0.66 mm. Massachusetts, — Mr. F. Blanchard.....**puritana** n. sp.

Body shining, black in color, almost similar to *puritana*, except that the head is evenly and semicircularly rounded at base and not broadly subtruncate toward the middle and more obviously elongated, with the punctures of the head and prothorax rather more close-set and the transverse impressions at the base of the abdominal segments more pronounced; form very slightly less slender. Male unknown. Length 3.3 mm.; width 0.68 mm. California (Contra Costa Co.).

rotundiceps Csy.

4 — Form, color and sculpture nearly similar to *brunnipes* but more slender and elongate, the legs piceous-brown throughout; head narrower and more elongate, the sides straight and parallel for half the distance from the eyes to the extreme base, measured longitudinally, then almost evenly and semicircularly rounded, feebly subtruncate toward the middle of the base; prothorax only just visibly narrower than the head; elytra narrower and more elongate, the sides parallel. Male having secondary sexual characters nearly similar to those of *brunnipes*, except that the prolongations of the apex of the fifth ventral — forming the sides of the large subquadrate emargination — are flexed more strongly inward toward tip, that the large oval flat impression of the sixth segment is

longitudinally divided anteriorly by a tumid ridge and that the sinus at the apex is rather smaller and about twice as wide as deep. Length 3.7 mm.; width 0.55 mm. Colorado (Salida), — Mr. Wickham.

procera n. sp.

Form nearly similar to the preceding, slender, polished, black, the legs black with the tarsi pale; head narrow, elongate, the sides parallel for rather more than half the longitudinal distance from the eyes to the middle of the base, then semicircularly rounded, not subtruncate medially; prothorax about equal in width to the head, elongate, the sides subparallel, broadly arcuate, very obtusely subangulate at apical fourth; elytra parallel, evidently elongate, nearly one-half wider and a fourth longer than the prothorax, impressed on the suture behind the scutellum; legs rather slender. Male having a deep and elongate-oval impression occupying median third of the fifth ventral and extending virtually to the base, the posterior margin with a transverse emargination, the sides of which are formed by rather short obtuse prolongations of the sides of the impression, the emargination not quite one-third as deep as the length of the impression before it, the posterior margin of the impression very feebly lobed and pubescent at the middle but without an acute subelevated process; sixth segment with a large simple apical sinus about three times as wide as deep, the surface before it apparently somewhat impressed. Length 3.4 mm.; width 0.55 mm. Nevada (Reno).....**angusticeps** n. sp.

5 — Body elongate, parallel, somewhat stouter than *angusticeps*, shining, black, the legs and antennae red-brown throughout; head well developed, rather wider just before the basal angles than across the eyes, the latter at nearly three times their own length from the base, which is broadly, transversely truncate, the angles moderately broadly rounded; prothorax elongate-oval, scarcely three-fourths as wide as the head, rapidly narrowed anteriorly as usual; elytra notably elongate, parallel, nearly one-half wider and a third longer than the prothorax, the punctures fine and scarcely at all asperate; abdomen subparallel, much narrower than the elytra and not quite as wide as the head. Male unknown. Length 3.9 mm.; with 0.63 mm. California (Mendocino Co.)..... .....**truncaticeps** Csy.

The description of *brunnipes*, given above, is from some pencil notes taken by the author some years ago from the original type. It is a smaller and more slender species than the eastern *puritana*, the latter differing also in having the spiniform process of the fifth ventral broader, more triangular and pubescent, though having the same subterminal single lateral setae, and the sinuation of the sixth segment is smaller and rather more broadly rounded. The spiniform process in *brunnipes*, as well as the posterior part of the concavity, is completely glabrous. The Californian *rotundiceps* Csy., is sim-

ilar but larger and has the legs colored as in *puritana*. I have assumed that the head in *brunnipes* is distinctly wider than the prothorax but appear to have made no note on this point; the original description of LeConte is wholly inadequate. The species described in the table under the name *angusticeps* is founded upon a specimen which I formerly regarded as the male of *rotundiceps* (Bull. Cal. Acad. Sci., 6, p. 218) but more careful comparisons indicate the impropriety of this association. There are before me two forms allied closely to *brunnipes*, which are left undescribed for the present; they occur at Lake Superior and in Montana (Kalispell).

Scopaeopsis n. gen.

This genus is one of the most isolated of the Scopaei, not only in general habitus and comparatively large size of its species, but by reason of labral structure, long slender tarsi — a character shared only with *Scopaeodera* — and elaborate secondary sexual modifications of the male. The integuments are clothed rather sparsely with very fine short and decumbent hairs and the punctures are, except on the elytra of certain species, excessively minute or subobsolete, being practically filled by the bases of the minute hairs. The species are moderately numerous, inhabiting the entire eastern parts of our territory, not known to me to extend west of the 100th meridian and entirely unknown to the Sonoran and Pacific coast faunas. The five species in my cabinet may be indicated as follows:—

Elytra large, as wide as the head or wider.....2
Elytra smaller, more or less distinctly narrower than the head; male sexual characters complex.....5
2 — Male sexual modifications comparatively simple.....3
Male sexual characters complex; elytral punctures stronger and rugose...4
3 — Subparallel, rather convex, moderately shining, the pale pubescence rather conspicuous, piceous-black, the head and pronotum dusky testaceous, the antennae dusky, pale toward tip; legs slender, the femora pale honey-yellow, the knees, tibiae and tarsi dusky or piceous; head scarcely longer than wide, the eyes well developed, convex and prominent, at about twice their length from the base, measured longitudinally as usual, the sides behind them very feebly converging, then broadly rounded into the semicircular base; antennae not as long as the head and prothorax, slender, not distinctly incrassate, the joints much more

cylindric in form than in the other genera, the basal joint long, not quite equaling the next three combined; prothorax distinctly elongate, three-fourths as wide as the head, broadly rounded and subparallel at the sides, the latter more strongly converging and becoming very feebly sinuate to the nuchal collar which is half as wide as the base; elytra parallel, distinctly longer than wide, very slightly wider than the head, nearly a third wider and one-fourth longer than the prothorax, the apical margin narrowly and abruptly yellow in color; abdomen throughout very much narrower than the elytra, at base four-fifths as wide as at the apex of the fourth segment. Male with ventrals two, three and four narrowly and simply impressed in the middle, the fifth not distinctly modified, the sixth with a very large notch occupying its entire width and three or four times as wide as deep, the notch having the form of an incised cusp with widely diverging arcuate sides and with the angle right and not rounded, the surface scarcely at all impressed. Length 3.8 mm.; width 0.7 mm. District of Columbia, North Carolina (Asheville) and Mississippi (Vicksburg).....**opaca** Lec.

4 — Body elongate, subparallel, convex, rather shining with the elytra and abdomen duller, piceous-black throughout, the narrow apical margin of the elytra and the legs throughout pale honey-yellow, the antennae similar in color, the funicle dusky toward base; head scarcely as long as wide, the eyes well developed and prominent, the sides behind them parallel for about their own length, then broadly rounded into the truncate base; antennae slender, feebly incrassate; prothorax shorter and stouter than in *opaca* but otherwise nearly similar, about four-fifths as wide as the head, rapidly narrowed in apical third; elytra parallel, much longer than wide, equal in width to the head, about a fourth wider and longer than the prothorax; abdomen at the apex of the fourth segment equal in width to the elytra, much narrower at base. Male with ventrals two to five strongly impressed along the middle, the impressions increasing in width from a sixth or seventh as wide as the segment on the second to nearly one-half the total width on the fifth, those of segments two to four nearly similar in character and abruptly limited at the sides, that of the fourth with a small tooth at each side at apex and a larger acute tooth in the middle very near the apex, that of the fifth broadly oval, nearly flat, with the sides strongly convex but not acute, the apex broadly sinuate along the impression; sixth segment broadly, biobliquely impressed, the apex with a large simple subangulate sinus about three times as wide as deep. Length 3.9 mm.; width 0.65 mm. Texas (Galveston).....**elaborata** n. sp.

Body similar to that of *elaborata* but shorter and slightly stouter, pale dusky testaceous in color throughout, the antennae concolorous, feebly paler distally, the apical margin of the elytra and entire legs pale honey-yellow; head relatively larger, the basal angles still more broadly rounded; prothorax somewhat smaller and less stout, elongate, rapidly narrowed at apex as usual and scarcely three-fourths as wide as the head; elytra shorter and relatively wider, but little longer than wide, equal in width to the head; abdomen narrow at base, more rapidly broadening posteriorly. Male unknown. Length 3.5 mm.; width 0.7 mm. Central Texas.....**pallens** n. sp.

5 — Form slender, convex, rather shining, the elytra and abdomen dull in lustre, piceous-black, the head, prothorax and entire antennae dusky testaceous, the legs paler, flavo-testaceous throughout; head large, the eyes moderately developed, the sides behind them very feebly converging and nearly straight for a long distance, then broadly rounded into the broadly subtruncate base; front not impressed; prothorax large, elongate-suboval, three-fourths as wide as the head and of the usual form; elytra small, very finely but densely, asperately punctate, parallel, slightly longer than wide, much narrower than the head, scarcely visibly wider than the prothorax and equal in length to the latter; abdomen at base very nearly as wide as the elytra, rapidly broadening posteriorly, and, at the apex of the fourth segment, much wider than the elytra and as wide as the head. Male with sexual modifications nearly similar to those of *elaborata* but differing in having the medial tooth of the impression of the fourth ventral more anterior in position and somewhat distant from the transversely rectilinear apical edge of the depression and in having the broad shallow impression of the fifth ventral transversely oblong with parallel and much straighter sides, the apex along the impression broadly and triangularly emarginate throughout the width of the latter; subtriangular sinus of the sixth segment larger, but little more than twice as wide as deep. Length 3.5-3.8 mm.; width 0.6-0.65 mm. New York (Long Island) and North Carolina (Asheville) ..... **ventralis** n. sp.

Form rather less slender but otherwise nearly similar throughout to *ventralis*, the coloration similar; head relatively smaller though more elongate, rather longer than wide, the base evenly, semicircularly rounded throughout, becoming parallel for a short distance behind the eyes; prothorax large, nearly five-sixths as wide as the head, longer than wide, strongly rounded at the sides; elytra relatively larger than in *ventralis*, but little narrower than the head and slightly wider than the prothorax, equal in length to the latter, longer than wide, parallel, minutely, densely and asperately punctate; abdomen at base but little narrower than the elytra, moderately broadening posteriorly, at the apex of the fourth segment rather wider than the head. Male having sexual characters similar in general to those of *ventralis*, the teeth at the sides of the apex of the impression of the fourth ventral much smaller and not at all conspicuous, the medial tooth more elongate but not very much more posterior in position, the impression of the fifth segment nearly similar in form and extent but with its posterior margin feebly and subcircularly sinuate toward the middle, the sinus of the sixth ventral nearly similar but rather smaller and shallower, the surface feebly and biobliquely impressed. Length 3.9 mm.; width 0.68 mm. Ohio (Cincinnati), — Mr. Charles Dury ..... **duryi** n. sp.

The coloration of the legs in *opaca* — which was originally described as an *Echiaster*,— is inconstant, some specimens having them a uniform clear honey-yellow throughout, while others have the tibiae almost piceous-black and the tarsi but

slightly paler. Although *pallens* is represented by the female only, I have before me two specimens which are mutually perfectly similar and its pale color is doubtless a specific character.

Scopaeodera Csy.

Among the genera of Scopaei having the basal joint of the hind tarsi elongated—a peculiar and very interesting series, apparently most highly developed in the American continents,—*Scopaeodera* is greatly isolated in habitus because of the highly polished, glabrous and subimpunctate integuments and presence of long stiff tactile setae. The species also differ from the others in their comparatively simple secondary male sexual characters and in having the middle pair of labral teeth alone developed, the exterior teeth being obsolete or extremely minute. They are almost exclusively tropical in range and in all probability numerous, but only two have been discovered thus far in our southwestern territories. A number of them were described by Dr. Sharp in the "Biologia" as *Scopaeus*, under group "4," and the Colombian *pulchellus* Er. and Amazonian *distans* Shp., among others, also belong here. Our two species may be readily identified by the following characters:—

Form rather slender, notably convex, polished throughout and pale flavo-testaceous in color, each elytron clouded with piceous-black behind the middle except at apex, the abdomen also largely blackish toward tip; erect tactile setae sparse, shorter on the elytra and in the single transverse discal series of the abdominal segments; elytra with long, coarse suberect and very sparse hairs in addition, the abdomen with very fine and moderately close-set pale pubescence; head rather small, longer than wide, the eyes large, convex and prominent, at a little less than twice their length from the base, the sides behind them converging and straight for a short distance, then very broadly rounded into the subtruncate median parts of the base; antennae moderately thick, feebly incrassate, not as long as the head and prothorax, with the cylindric basal joint longer than the next two together; prothorax very slightly narrower than the head, longer than wide, widest and obtusely subangulate laterally at apical fourth, the sides thence gradually converging and broadly arcuate to the base and very rapidly converging and feebly sinuate to the narrow neck, the surface strongly convex, impunctate; elytra slightly elongate, parallel and broadly arcuate at the sides, nearly

one-half wider and a fourth longer than the prothorax and very much wider than the head, broadly convex, impressed on the suture toward base; abdomen toward base much narrower than the elytra but rapidly broadening, so that the apex of the fourth segment is somewhat wider than the elytra, the fifth segment obtrapezoidal and nearly as long as the two preceding combined; legs slender. Male with the fifth ventral unmodified, the sixth having a triangular incisure at apex about one-half deeper than wide, the surface feebly impressed in prolongation thereof. Length 3.2 mm.; width 0.55 mm. Texas (Houston and Luling) ..... **nitida** Lec.

Form, sculpture and coloration almost completely similar to *nitida*, the dark subapical cloud of the abdomen usually confined to the discal parts of the fifth segment only and the general color rather paler than in *nitida;* head nearly similar but with much less broadly rounded basal angles, the truncate part of the base wider and more transverse; prothorax nearly similar, the elytra larger and relatively more elongate, the abdomen notably broader and less dilated posteriorly, the fifth segment much shorter than the two preceding. Male with the fifth ventral unmodified, the sixth having a moderately large notch at apex, the emargination triangular with straight sides and angulate apex and nearly twice as wide as deep, the adjacent surface not at all impressed. Length 3.1 mm.; width 0.6 mm. California (Yuma and the Needles). **sonorica** n. sp.

These species are both rather abundant and somewhat resemble certain ants in their movements and coloration. *Nitida* was originally described under the generic name *Echiaster*.

Stilici.

The few generic types of this well-marked subtribe are remarkably consistent in the form of the tarsi, neck and gular sutures and differ among themselves principally in modifications of the labrum, maxillary palpi, prosternum and sculpture of the integuments. The hind tarsi are more or less elongate throughout, with the basal joint always distinctly longer than the second and sometimes as long as the next two combined but varies considerably in relative elongation, even within the limits of *Stilicus* itself. The neck is always very slender and not variable in width, as it is in the Scopaei, and the gular sutures are invariably coalescent and unified at least toward base. The anterior tarsi are generally very slightly dilated and spongy-pubescent beneath. The genera known to me may be briefly described as follows: —

Labrum broadly rounded or subtruncate at apex, the teeth two in number, more or less aciculate and always approximate; second joint of the maxillary palpi much shorter than the third; anterior tarsi finely, densely pubescent beneath; prosternum very finely, feebly carinate throughout..... 2

Labrum broadly sinuato-emarginate at apex, the emargination having two short obtuse and more widely separated teeth; second palpal joint very much shorter than the third; anterior tarsi not at all dilated, having long coarse hairs beneath; prosternum finely, unevenly and feebly carinate..... 3

Labrum quadridentate at apex and generally broadly subtruncate and triemarginate..... 4

2 — Head rounded to subtruncate at base, the body rather slender; legs and tarsi slender; sculpture more or less coarse. Palaearctic and Nearctic regions.....**Stilicus**

Head broadly sinuate at base, the body very stout; legs and tarsi thick; sculpture very fine and dense. Nearctic regions.....**Pachystilicus**

3 — Body very stout with the head orbicular; third maxillary palpal joint unusually small, subcylindric and bent; sculpture fine and dense, the vestiture very short and stiff; femora and tibiae rather thick, the hind tarsi slender and almost as long as the tibiae. Myrmecophilous. Nearctic regions.....**Megastilicus**

4 — Outer pair of labral teeth as large and conspicuous as the inner; second palpal joint much shorter than the third; anterior tarsi slightly dilated and more densely pubescent beneath; legs slender; sculpture coarse as in *Stilicus*. Palaearctic regions.....***Stilicosoma**

Outer pair of labral teeth very minute; anterior tarsi not dilated and usually not densely clothed beneath; sculpture of the integuments always very fine and dense..... 5

5 — Prosternum strongly carinate throughout its length..... 6

Prosternum not at all carinate except posteriorly near the coxae..... 7

6 — Inner pair of labral teeth short and broad, widely separated, each tooth deeply bifid and forming two acute denticles; labrum not at all produced in the middle but broadly subtruncate; head rounded at base, the eyes moderate or rather small; second palpal joint but little shorter than the third, moderately elongate; gular sutures as usual; prothorax oblong-parallel, the angles distinct. Nearctic regions.....**Stilicolina**

Inner pair of labral teeth strong, the labrum elongated in the middle; maxillary palpi very long; mandibles broad; prosternum elongate, the prothorax without the lateral angles of *Stilicus*. Tropical America.
***Eustilicus**

7 — Labrum broadly truncate and deeply trisinuate, the median teeth long, simple and aciculate; mandibles broad and strong; maxillary palpi long, the second joint slightly shorter than the third; gular sutures meeting behind the middle; head subtruncate at base, the eyes very small; prothorax obtrapezoidal, the anteriar angles rounded; legs long, the femora somewhat stout. Sonoran region.....**Omostilicus**

The characters of the Mexican and Central American *Eustilicus* Shp., are taken from the "Biologia;" at first it

seemed as though the genus named *Omostilicus* in the table might be identical, but the statements concerning the absence of thoracic angles and carination of the prosternum evidently render highly improbable any close affiliation of the two genera. The presence of two minute external labral denticles in *Eustilicus* is assumed, as no mention of them is made by Dr. Sharp. It is rather singular that the completely different labrum of *Stilicus rufipes* Germ., taken in connection with its very pronounced divergence in general habitus, should not have been more fully dwelt upon by European authors. The differences are of full generic significance and the name *Stilicosoma* (n. gen.) is suggested for it as above.

Stilicus Latr.

The American species of this genus are all much smaller than the European and have far simpler secondary male sexual characters, but appear to be truly congeneric. They occur throughout the United States from the Atlantic to the Pacific and are generally rather abundant individually. There are usually several species possessing secondary male sexual characters of the same type, though variously modified, and they might be classified in this manner, but, owing to the fact that a very few distinct forms are at present represented by the female alone, I prefer to attempt an arrangement based upon general characters, presumably common to the sexes, as follows: —

Under surface of the head densely punctured 2
Under surface of the head sparsely punctured 6

2 — Sculpture finer, the punctures dense even on the elytra. Form rather broad and subdepressed, rufo-piceous in color, the abdomen blackish, the elytra dusky with the external angles broadly pale, the legs and antennae rufo-testaceous; head well developed, subquadrate, truncate at base with broadly rounded angles, the sides parallel; eyes large, broadly convex, at about one-half more than their own length from the base; antennae rather slender, feebly incrassate, scarcely a third longer than the head; surface confluently punctate above, the punctures shallower and polygonally crowded beneath; prothorax rather broad, slightly longer than wide, nearly three-fourths as wide as the head, obtusely angulate at the sides at apical third, the angles well rounded,

the sides feebly converging and broadly rounded thence to the base and rapidly so and subsinuate thence to the narrow apex, the punctures similar to those of the head but less confluent; elytra quadrate, parallel, a third wider and one-fourth longer than the prothorax, equal in width to the head, closely and asperately punctate; abdomen parallel with very feebly arcuate sides, distinctly narrower than the elytra, minutely, closely punctate; hind tarsi rather shorter than usual. Male with a broadly rounded abrupt emargination occupying median third of the apex of the fifth ventral, from the bottom of which projects a narrow slender aciculate process extending beyond the limits of the sides of the emargination; sixth segment with a triangular notch having straight sides and acute apex, somewhat deeper than wide and about one-third as wide as the segment; segmental surfaces unimpressed. Length 3.9 mm.; width 0.78 mm. District of Columbia.

opaculus Lec.

Sculpture coarse, the elytra always more or less sparsely punctate..... 3

3 — Head broadly subtruncate at base, the eyes very large, the antennae short and thicker; pronotum with a smooth median line; elytra large, wider than the head; punctures of the head very dense but not coalescent; body less elongate.....4

Head rounded or subangulate at base, more elongate, the eyes moderate in size, the antennae longer and more slender; pronotum without a smooth median line; elytra smaller, never wider than the head; punctures of the head longitudinally confluent..... 5

4 — Body stout, parallel, moderately convex, deep black in color throughout except the elytral apex, which is pale flavo-testaceous and similar in color to the femora and tarsi, the knees and tibiae piceous, the antennae dusky testaceous; lustre dull, the elytra and broad median line of the pronotum polished; head as wide as long, coarsely and very densely punctate above and beneath, the eyes very large, broadly convex and not very prominent, almost continuing the outline of the tempora behind them and situated at about two-thirds of their own length from the base; tempora evenly rounded from the eyes to the neck, the base broadly, very feebly arcuate or subtruncate; prothorax slightly elongate, two-thirds as wide as the head, punctured like the latter except along the impunctate median line, broadly angulate at apical third, the sides thence just visibly converging and straight to basal fourth, then more convergent and subsinuate to the broad base, strongly converging and broadly subsinuate anteriorly to the narrow neck; elytra large, parallel, scarcely as long as wide, three-fifths wider and one-third longer than the prothorax, convex, strongly impressed throughout at each side of the suture, the punctures fine, sparse and scarcely at all asperate; abdomen parallel, narrower than the elytra but subequal in width to the head, the sides feebly arcuate, minutely, closely punctate; legs slender. Male unknown. Length 4.3 mm.; width 0.95 mm. Oregon (Albany),—Mr. Wickham.....**oregonus** n. sp.

Body similar in form, coloration and sculpture to the preceding but smaller in size, with the eyes more convex and prominent, the tempora behind them less converging to the broadly rounded basal angles, the feebly converging straight sides of the prothorax behind the obtuse anterior

angles shorter, extending only to basal third, the elytra relatively smaller and only just visibly wider than the head, about as long as wide, the abdomen wider, being, at the middle, very nearly as wide as the elytra. Male with the fifth ventral broadly and slightly flattened toward the middle, the apex truncate, with a very shallow simple and and broadly rounded sinus in fully median third; broad tip of the sixth segment with a simple semicircularly rounded sinus in about median fourth and about three times as wide as deep. Length 3.9 mm.; width 0.88 mm. New York (Long Island) to Virginia...**latiusculus** Csy.

5 — Prothorax evidently shorter than the elytra. Body blackish-piceous in color, except the prothorax which is dusky rufous, the elytral apices and legs throughout pale flavo-testaceous, the antennae dark rufo-testaceous; punctures of the head and pronotum coarse and longitudinally confluent, of the under surface of the former equally coarse and very close-set but not distinctly confluent, of the elytra finer but strong and rather sparse, of the abdomen very fine and notably sparse, the last two surfaces polished; head longer than wide, the convex eyes at nearly twice their own length from the base, the sides behind them rapidly converging and broadly arcuate to the narrow neck; labral teeth unusually long and acute; prothorax much longer than wide, two-thirds as wide as the head, broadly rounded and very obsoletely subangulate at two-fifths from the apex, the sides thence feebly converging and nearly straight to basal fifth, thence strongly converging to the base, strongly converging and straight anteriorly to the narrow neck; elytra quadrate, parallel, one-half wider than the prothorax and about a fifth longer, just visibly narrower than the head; abdomen parallel, very feebly arcuate at the sides, as wide as the elytra; legs slender. Male with the fifth ventral unmodified on the disk, the apex rectilinearly truncate, with a very small, broadly triangular median process, wider than long and obtusely angulate, the process slightly tumid on the surface, the sixth segment with a broad, shallow and broadly rounded apical sinus, nearly five times as wide as deep. Length 4.3 mm.; width 0.75 mm. New York, Pennsylvania and District of Columbia.

rudis Lec.

Prothorax equal in length to the elytra. Body stouter but otherwise nearly similar, pale rufo-testaceous in color, the abdomen broadly clouded with piceous, the elytra more flavate, with the apex more broadly and conspicuously pale and nearly luteous-white, the legs very pale honey-yellow throughout; head nearly as in *rudis* but broader and less evenly rounded at base, the latter being broadly and obtusely subangulate; prothorax broader and more oval, the anterior angles, just behiud apical third, much more broadly rounded and subobsolete; elytra larger, subquadrate, only very slightly narrower than the head, two-fifths wider and scarcely longer than the prothorax, strongly shining and somewhat more sparsely punctured than in *rudis;* tarsi rather more elongate. Male unknown. Length 4.3 mm.; width 0.8 mm. Rhode Island (Boston Neck).....**apicalis** n. sp.

6 — Head broadly rounded or subtruncate at base.....7

Head strongly rounded or subangulate at base, generally ogival in form behind the eyes 10

7 — Elytra large, much wider than the head.....8
Elytra small, always distinctly narrower than the head.....9

8 — Stout in form, convex, shining, obscure rufo-piceous in color, the elytra subpiceous with pale apex, the abdomen blackish, the legs throughout pale lateo-flavate; head fully as wide as long, rather coarsely punctate, the punctures shallow, not coalescent but polygonally crowded, each with a crater-like centre bearing a small hair, strong but sparse on the under surface; eyes large, at scarcely their own length from the base, the sides behind them rounded in circular arc to the feebly rounded and broadly subtruncate base; labrum large, the teeth small; antennae rather thick; prothorax unusually large, but little longer than wide, nearly three-fourths as wide as the head, the obtuse angles at apical third distinctly rounded, the punctures rather coarse but not very dense, the surface shining, the broad polished impunctate median line not at all canaliculate; elytra quadrate, more than one-half wider than the prothorax and two-fifths longer, finely, subasperately and sparsely punctate; abdomen narrower than the elytra, minutely, subasperately and rather closely punctate; legs only moderately long and slender. Male with the fifth ventral broadly and feebly flattened toward the middle, the apex rectilinearly truncate and unmodified, the sixth segment with a large rounded sinus much wider than deep. Length 3.9 mm.; width 0.8 mm. Rhode Island, Virginia, Lake Superior and Texas (Austin).
angularis Er.

Form and size the same as in *angularis;* color more nearly piceous; head above rather finely and densely punctate, not rugose; below rufo-piceous, polished, somewhat sparsely punctate; sides behind the eyes slightly convergent, the hind angles rounded; base truncate; prothorax densely punctate, with a narrow, smooth and slightly elevated median line; elytra more finely and sparsely punctate, the tips narrowly pale; abdomen very finely, moderately densely punctured. Male with the fifth ventral toothed at the middle of the hind margin, the sixth triangularly emarginate. Length 4.0 mm. California (Los Angeles and Kern Cos.).
occiduus Fall

9 — Moderately slender, subparallel, piceous-black, the elytra scarcely at all paler at tip, the abdomen black, the legs throughout pale luteo-flavate, the antennae dusky testaceous; surface somewhat shining, the punctures of the head and prothorax moderately coarse and densely subconfluent, of the elytra finer, subasperate and rather close-set, of the abdomen very fine, subasperate and moderately dense; head large, fully as wide as long, the eyes very large, convex and prominent, at notably less than their own length from the base, the sides behind them rapidly converging and broadly arcuate to the feebly arcuate base; prothorax much elongated, only three-fifths as wide as the head, of the usual form, the polished median line rather narrow but scarcely at all concave; elytra relatively very small, notably shorter than the prothorax and not much more than a fourth wider, quadrate, the sides very feebly diverging from the base, the surface unusually depressed or flattened; abdomen at base fully as wide as the elytra, wider at the middle, the sides parallel and feebly arcuate as usual; legs long. Male with the apex of the fifth ventral rectilinearly truncate and un-

modified, the surface with two small tumescent processes very near the apex, separated by about twice their own width, the sixth segment with a large simple rounded sinus, nearly three times as wide as deep. Length 3.7 mm.; width 0.7 mm. Massachusetts.....**biarmatus** Lec.

Nearly similar throughout to the preceding but a little larger, the prothorax relatively smaller and less elongate, two-thirds as wide as the head, with the polished median line still narrower and distinctly concave; elytra larger, quadrate, a third wider and obviously longer than the prothorax. Male with the apex of the fifth ventral retilinearly truncate and unmodified, the surface with two tumescent processes as in *biarmatus*, but having these processes very much smaller and separated by fully three times their own width, the sixth segment with a large and nearly similar sinus at tip. Length 3.9 mm.; width 0.75 mm. Lake Superior (Bayfield), — Mr. Wickham — and Iowa.....**lacustrinus** n. sp.

Somewhat similar to the two preceding in general form, piceous, the prothorax dusky rufous, the abdomen black; head more evenly and semicircularly rounded throughout from eye to eye, the confluent punctures somewhat coarser than in *biarmatus;* prothorax narrower and relatively more elongate, the angles very obtuse and rather more rounded, the punctures dense and confluent, the median impunctate line much wider and wholly unimpressed; elytra more convex and more finely and sparsely punctate, a little shorter than wide, with pale apex, rather shorter than the prothorax and two-fifths wider, less obviously narrower than the head than in *biarmatus;* abdomen at base slightly narrower than the elytra, at about the middle as wide as the latter, less densely punctulate and more polished. Male having the apex of the fifth ventral rectilinearly truncate, with a very small feeble arcuate lobe at the middle, the surface with two transverse and very feeble, densely and coarsely setulose tumidities very near and parallel to the hind margin, mutually separated by a very narrow space scarcely half as wide as either, the sixth segment with a very large simple parabolic sinus at tip. Length 3.7 mm.; width 0.7 mm. New York (near the city). **abbreviellus** n. sp.

10 — Median smooth line of the pronotum narrow, the polished elytra submetallic in lustre. Rather stout, convex, dark piceous in color, the abdomen black, the elytral apex narrowly pale, more broadly toward the sides, the legs pale luteo-flavate throughout, the antennae dark rufous; surface dull, somewhat coarsely, densely and confluently punctate anteriorly, the elytra and abdomen sparsely, finely punctate and polished; head relatively small, rather longer than wide, the eyes large, convex and prominent, at about their own length from the base measured longitudinally, the contour behind them ogival; antennae moderately long and slender, distinctly incrassate distally; prothorax slightly elongate, fully three-fifths as wide as the head, the sides obtusely but very distinctly angulate at two-fifths from the apex, thence very feebly converging and straight to basal fifth, then strongly converging and sinuate to the base; elytra large, quadrate, parallel, broadly convex, distinctly wider than the head, three-fourths wider and nearly a third longer than the prothorax; abdomen at base distinctly narrower than the elytra, the third and fourth segments generally subequal in

width to the latter; legs rather long and slender. Male with the fifth segment rectilinearly truncate at tip, with a gradually formed short and acute median lobe in the form of a cusp, occupying about median eighth or ninth of the width, the sixth segment with a simple rounded sinus occupying about half the apex and fully four times as wide as deep. Length 3.8 mm.; width 0.82 mm. New York, Virginia, Iowa, Missouri and Texas (Austin).....**dentatus** Say

Median smooth line broader and more conspicuous; abdomen very sparsely punctulate and polished; elytra finely and sparsely punctate and strongly shining but never metallic in lustre; punctures of the head and pronotum rather coarse and strongly, longitudinally confluent.....11

11 — Elytra large, slightly wider than the head.....12

Elytra small, evidently narrower than the head.....13

12 — Form moderately stout, blackish-piceous in color, the elytral apex and legs throughout pale luteo-flavate, the antennae pale rufous; head somewhat longer than wide, rather broadly ogival behind the eyes, the latter convex and prominent, at their own length from the base measured longitudinally; antennae rather thick, distinctly incrassate distally; prothorax nearly as in *dentatus*, two-thirds as wide as the head; elytra scarcely as long as wide, slightly wider than the head, parallel, two-thirds wider than the prothorax and a third longer; abdomen at base obviously narrower than the elytra, the third and fourth segments as wide as the head; legs only moderately long and slender. Male with the apex of the fifth ventral broadly, feebly sinuate in median third, with a broad and obtusely angulate tooth gradually formed at the bottom of the sinus, the surface of the process slightly tumid and polished; sixth segment broadly, cylindrically impressed along the middle, with an apical sinus nearly a third as wide as the segment and about twice as wide as deep, subtriangular in form but with the angle distinctly rounded. Length 3.75 mm.; width 0.78 mm. Rhode Island (Boston Neck).....**luculentus** n. sp.

Form and size nearly similar to *luculentus* but deep black throughout, the elytra and abdomen highly polished, very finely, sparsely punctured, the former without paler apex except very faintly toward the external angles, the femora and tarsi pale honey-yellow, the former toward tip and the entire tibiae picescent, the antennae dusky; head nearly similar but more broadly and obtusely ogival at base, the eyes larger and at less than their own length from the base; antennae more slender and less incrassate; prothorax nearly similar; elytra quadrate, parallel, fully as long as wide, only just visibly wider than the head, three-fourths wider and two-fifths longer than the prothorax; abdomen nearly as in the preceding, the legs rather longer and more slender. Male unknown. Length 3.6 mm.; width 0.75 mm. Mississippi (Vicksburg).

nigrolucens n. sp.

13 — Form somewhat similar to the two preceding, smaller in size, black in color throughout, the elytra and abdomen highly polished and sparsely punctulate, the former pale only at the external apical angles, the legs as in *nigrolucens*, the antennae moderately slender, distinctly incrassate and somewhat paler rufous; head rather acutely ogival behind the eyes, which are very large, convex and prominent and at scarcely their own

length from the base; prothorax relatively larger, but otherwise similar in form; elytra subquadrate, rather shorter than wide, parallel, distinctly narrower than the head, not distinctly longer than the prothorax and only about two-fifths wider; abdomen near the middle fully as wide as the elytra. Male with sexual characters somewhat resembling those of *luculentus*, the broad sinuosity of the fifth ventral still more shallow, with the process at its middle point almost obsolete, being reduced to a very small, short and broadly rounded lobe; sixth segment more broadly impressed along the middle, with the apical sinus scarcely twice as wide as deep and very broadly parabolic in form, being much less narrowly rounded at the bottom. Length 3.5 mm.; width 0.7 mm. Rhode Island (Boston Neck).....**minusculus** n. sp.

The species named *minusculus* above seems to differ from any other in having the elytra obliquely and obscurely uni- or bi-costulate on the disk. The characters of *occiduus* are those given by Mr. Fall in the original description (Occas. Papers, Cal. Acad., viii). The species of the table constituting distinct types are *opaculus*, *latiusculus*, *rudis*, *biarmatus*, *dentatus* and *angularis;* the form named *abbreviellus*, although a well defined species, evidently belongs to the *biarmatus* section and the last three species of the table are distinct modifications of the *dentatus* type. The *rudis* type is distinguished by its much smaller eyes, these being of about the same size as in the European *Stilicus capitalis*. The Japanese species of the *rufescens* type, resemble *opaculus* and are distinguished from the others by an obviously less coarse and denser sculpture, subquadrate head truncate at base and by the presence of a few irregular longitudinal series of coarser punctures on the elytra, a character not observable elsewhere.

Pachystilicus n. gen.

The species of this genus are few in number but distributed over the entire nearctic province from the Atlantic to the Pacific. They are closely allied to *Stilicus* but differ in the very short and broad form, finer punctuation and much shorter and thickened legs; these characters, in addition to the large quadrate head, deeply sinuate at base, give them a distinctly different facies. The evidence at present accessible to me seems to indicate two species as follows:—

Color blackish-piceous, pruinose with very fine pubescence; head quadrate behind the eyes, the hind angles rounded, the base "emarginate," densely punctate and dull above, the under surface densely and rugosely punctured; prosternum very feebly carinate; prothorax small, hexagonal, the base one-half wider than the apex, the sides obtusely rounded, broadly subangulate before the middle, the punctures fine and close-set but with the surface rather shining, the punctures smaller than those of the head, the median impunctate line distinct, moderately wide and not elevated; elytra strongly transverse, not longer than the prothorax, as wide as the head, finely, moderately densely punctate, the punctures distinctly separated; abdomen finely, densely punctate. Male with the fifth ventral not modified, the sixth with a small rounded median sinus at apex, the surface not modified. Length 4.7 mm.; width 1.0 mm. California..... **quadriceps** Lec.

Color dull rufo-testaceous, the legs and antennae concolorous, the head and abdomen above black, dusky beneath; body nearly similar to the preceding but with the prothorax slightly larger, not quite as long as wide, with the base very nearly twice as wide as the apex and the median impunctate line very narrow; elytra less transverse but much shorter than wide, somewhat longer than the prothorax and fully two-fifths wider, as wide as the head; abdomen short, at base fully as wide as the elytra, the sides parallel and arcuate, the third and fourth segments materially wider than the elytra or head. Male somewhat smaller and less stout than the female, the fifth ventral very feebly sinuate in about median third at apex, the adjoining surface feebly flattened, less punctured and glabrous; sixth segment not distinctly visible in specimens at hand but apparently with the sinus larger and shallower than in *quadriceps*. Length 3.5 mm.; width 1.1–1.2 mm. Manitoba (Winnipeg) ..... **hanhami** Wickh.

The characters of *quadriceps*, given above, are derived from the original description and from some pencil notes taken by the writer from the original type some years ago. The forms from Missouri and Massachusetts, said by Dr. LeConte to be identical, are unknown to me at present. Of *hanhami* Wickham, I have three specimens.

Megastilicus Csy.

This remarkable myrmecophilous genus is founded upon a large species, of very stout form, with unusually small orbicular head, densely opaque integuments of the head and prothorax and with sparse vestiture consisting of short suberect stiff bristles, which characters give it a facies wholly without parallel in the subtribe. It may be described as follows:—

Form moderately convex, the hind body very broad, brownish-rufous throughout, the legs and antennae concolorus, the head and abdomen blackish; surface of the head above and beneath and of the pronotum impunctate but densely and very strongly micro-reticulate, the stiff short setae moderately close-set, of the elytra and abdomen rather more shining, the former less strongly reticulate, somewhat rugulose but not distinctly punctate, the setae very thick and moderately close-set, the latter rather densely clothed with very fine short and decumbent hairs of the usual type; head rather longer than wide, the base feebly lobed in the middle, the eyes small, not prominent, at fully three times their length from the base measured longitudinally; antennae short, moderately thick, about as long as the head, feebly incrassate, the joints rather closely united; prothorax slightly longer than wide, three-fourths as wide as the head, strongly rounded laterally at apical third, the sides thence moderately converging and nearly straight to the base and more strongly converging to the apex, the latter about half as wide as the base; surface with a narrow and less opaque median line; elytra one-fifth wider than long, nearly one-half wider than the head, three-fourths to four-fifths wider than the prothorax and fully a third longer, the sides feebly diverging from the base and broadly, feebly arcuate; abdomen short and broad, less than one-half longer than the elytra, at base fully as wide as the latter, and, at the middle, a little wider. Male with the fifth ventral unmodified, the sixth with a very large simple parabolic sinus, about half as wide as the segment and between two and three times as wide as deep. Length 5.0 mm.; width 1.45 mm. Massachusetts (Dracut),—Mr. Blanchard..**formicarius** Csy.

Although the body has a very stout form, nearly as in *Pachystilicus*, it probably has little or no phylogenetic relationship with that genus, as the head, labrum, palpi, sculpture and vestiture are of wholly different types. There is but little difference between the male and female, the former having the head and prothorax very slightly narrower when compared with the hind body.

Stilicolina n. gen.

In the peculiar opaque surface and very fine subgranuliform punctuation, this genus resembles *Omostilicus* and the remarkably fine and obsolete sculpture of *Eustilicus*, mentioned by Sharp, is probably similar. This type of sculpture is wholly dissimilar from that prevailing in *Stilicus*. In the very sharply elevated and entire prosternal carina and structure of the labrum, *Stilicolina* is wholly different from *Omostilicus*. We

know at present but one species which may be described as follows from the male:—

Elongate, rather slender, parallel, only moderately convex, dark red-brown in color throughout the body and antennae, the legs slightly paler; lustre dull, the elytra feebly shining; head rather longer than wide, the posterior half almost evenly semicircular in form, the eyes rather small, only slightly prominent and at about three times their length from the base measured longitudinally; antennae scarcely one-half longer than the head, somewhat thick, distinctly incrassate distally; punctures feebly granuliform and close-set above, obsolete and very sparse on the flat under surface; prothorax very densely punctured like the head but rather more finely and strongly, the median impunctate line very fine and scarcely entire, scarcely visibly longer than wide, three-fourths as wide as the head, oblong in form, the sides obtusely angulate and rounded at apical fourth, thence just visibly converging and straight to the broadly rounded basal angles and rapidly converging and feebly sinuate anteriorly to the narrow neck, which is less than half as wide as the broad truncate basal margin; elytra quadrate, parallel, fully as long as wide, rather wider than the head and about a third wider and longer than the prothorax, the punctures strongly and granularly asperate but less dense than those of the prothorax; abdomen parallel with the sides feebly arcuate, distinctly narrower than the elytra, very minutely, densely, subasperately punctulate. Male with the fifth ventral almost completely unmodified, the sixth with a very large and deep emargination, two-fifths as wide as the segment and somewhat wider than deep, the notch transversely and feebly rounded at the bottom, with its sides becoming almost parallel posteriorly. Length 5.7 mm.; width 0.95 mm. District of Columbia..... **tristis** Melsh.

This species does not seem to be at all abundant and most of the known examples were taken by Mr. Ulke.

Omostilicus n. gen.

This genus is also represented at present by a single species, the largest of the subtribe known to me. It departs strikingly from *Stilicolina* in its much larger head, very small eyes, form of the gular sutures, for the greater part non-carinate prosternum and structure of the labrum, but resembles it very much in sculpture, coloration and sexual characters. In both these genera the anterior tarsi are virtually undilated, even in the male, and are clothed beneath more or less sparsely with short stiff brown hairs, contrasting greatly with the dense

white spongy-pubescent sole in *Stilicus*. The generic type may be described as follows: —

Moderately stout and convex, subparallel, evenly dark red-brown in color throughout, the integuments densely dull in lustre, the abdomen alone slightly shining; punctures of the head very finely, densely and obsoletely granuliform above, obsolete and sparse on the under surface which is simply densely micro-reticulate, of the pronotum finer, still denser and stronger, of the elytra coarser, dense and rugose, of the abdomen minute, asperulate and very close-set; head large, subpyriform, the sides parallel and broadly, evenly arcuate, merging gradually into the very broadly rounded basal angles, the base truncate in median half of the entire width; eyes very small, not at all convex or prominent, at fully four times their own length from the base; under surface notably convex, the sutures impressed; antennae rather long, moderately slender, not distinctly incrassate, twice as long as the prothorax, the basal joint much longer than the next two together; prothorax but slightly longer than wide, three-fifths as wide as the head, the sides obtusely angulate and rounded just behind apical fourth, thence rather strongly convergent and nearly straight to the broadly rounded basal angles and rapidly converging and nearly straight anteriorly to the neck, the apex about half as wide as the base, the disk without trace of smooth median line; elytra subquadrate, rather longer than wide, parallel and broadly arcuate at the sides, four-fifths as wide as the head, only one-fifth wider and about a fourth longer than the prothorax; abdomen parallel, broadly arcuate at the sides, slightly narrower than the elytra at base but as much wider than the latter at the middle of its length. Male with the fifth ventral virtually unmodified, the sixth with a large, circularly rounded sinus, occupying almost the entire apex and more than twice as wide as deep. Length 8.0 mm.; width 1.4 mm. Arizona.

sonorinus n. sp.

The description is drawn from the male throughout, this being the only sex known to me at present.

Stilicopses.

This subtribe is, in some measure, intermediate between the Stilici and Sunii, having the free space between the corneous floor of the anterior acetabula and the side-pieces of the pronotum narrower than in the former, while in the Sunii these parts are connate. On the whole, the species bear a closer general resemblance to the Sunii than to the Stilici, however, and the reality of this affinity is further affirmed by the structure of the antennae and palpi, by the united

gular sutures, tarsal structure and general type of sculpture. The group is peculiar to the American continents and comprises the two following genera: —

Body small in size, shorter and rather stouter in form, the head having coarse shallow polygonally crowded punctures, forming a reticulation, the pronotum granularly punctate, the elytra and abdomen rugosely punctured, the former more coarsely; head broadly arcuato-truncate at base, the eyes moderate, prominent; labrum large, with short parallel sides at base, the apex broadly angulate, with the angle truncate; antennae rather short, slender, feebly incrassate distally; ligula apparently unmodified at apex; labial palpi very slender, the third joint very short, aciculate; maxillary palpi long and well developed, the second joint long, slender, with very short sparse stiff hairs, the third elongate-oval, shorter than the second and more gradually narrowed toward base, the apical cavity very small, the surface densely clothed with short fine decumbent hairs, the fourth joint very small, obtuse and apparently minutely pubescent; gular sutures forming a single cleft-like line; neck between a fourth and fifth as wide as the head; prothorax circular, the apex not prolonged at the middle; prosternum well developed before the coxae, minutely and feebly carinulate throughout along the median line, having a small transverse gutter just behind the apical margin; elytra shorter than wide, with broadly rounded basal angles, the hind wings probably obsolete; abdomen short and broad with arcuate sides, the segments not impressed; legs somewhat slender, the tarsi short and rather thick, the anterior not at all dilated, the posterior with the first joint slightly less than half the entire length and more than twice as long as the second, the third extremely short, much wider than long, the fourth strongly lobed, including the lobe about as long as wide, the lobe truncate, the fifth short and very slender, extending only slightly beyond the apex of the lobe of the fourth joint; claws small, slender and feeble. Eastern North and Central America..... **Stilicopsis**

Body larger, more elongate and more convex, the upper surface throughout simply and only moderately coarsely punctate; antennae very slender and much elongated, only the last three joints gradually and feebly incrassate, the joints very slender, each swollen anteriorly toward apex; labrum very large with the basal part rounded at the sides, the middle three-fourths of the apex having the sides converging to the transversely truncate median part, which is nearly one-half the total width; eyes well developed, prominent; base more rounded; palpi and gular sutures nearly as in *Stilicopsis;* neck barely a fifth as wide as the head; prothorax elongate, rounded at the sides and gradually narrowed toward base, the apex narrowly prolonged in the middle to the neck, this lobe truncate at tip and narrower than the base; prosternum longer before the coxae, broadly constricted behind the apex, finely carinate along the middle throughout; legs slender, the tarsi nearly as in *Stilicopsis* but rather more slender and elongate, the basal joint relatively still longer, constituting half the entire length. North and Central American Atlantic coast..... **Stamnoderus**

These genera differ greatly in the general facies of the body, in the antennae, sculpture and form of the prothorax but are closely related otherwise.

Stilicopsis Sachse.

The peculiar form of the prothorax, almost exactly circular in outline, short elytra with diverging sides and broad convex abdomen, will identify this remarkable genus at first glance. Our single species may be briefly described as follows: —

Form parallel, moderately convex, pale luteous in color throughout, slightly shining, subglabrous; head scarcely as long as wide, the eyes convex, prominent, coarsely faceted and at somewhat more than their own length from the base measured longitudinally, the sides circularly rounded behind them to the neck; antennae distinctly shorter than the head and prothorax, the latter feebly convex, densely granulose throughout, the surface impressed at the sides behind the middle, equal in width to the head; elytra transverse, not quite as long as the prothorax, at apex distinctly wider, coarsely, closely, rugosely punctate; abdomen at the middle wider than the elytra, finely, closely and rugosely punctate, shining. Male with the fifth ventral broadly, parabolically emarginate throughout its width, the sixth similarly emarginate but more strongly; cleft of the seventh broad, the ligula parallel, arcuato-truncate at tip; segmental surfaces not modified. Length 2.6 mm.; width 0.58 mm. North Carolina (Asheville) and Florida.

paradoxa Sachse

The median line of the pronotum is very finely elevated or cariniform. Other species occur in Mexico and the neotropical regions.

Stamnoderus Shp.

The species of this genus are at least three in number in our Atlantic states and may be readily distinguished from *Stilicopsis paradoxa* by the larger size and the peculiar form of the prothorax. The antennae are of unique structure, the singular swelling of the anterior side of the long and extremely slender joints toward tip being doubtless of a special sensorial nature. Individuals are not at all rare and the species represented by material before me may be distinguished by the following characters — drawn from the female in each case: —

Body black or piceous-black in color, the elytra and last two ventral segments pale; legs and antennae very pale throughout; abdomen broader 2

Body pale luteous in color throughout, somewhat smaller in size..... 3

2 — Form stouter, convex, shining throughout, the head and prothorax with impressed close-set and rather feeble but distinct punctures, the elytra more coarsely, deeply, rather closely, subrugosely and conspicuously punctate, the abdomen finely, closely punctulate; head as long as wide, abruptly narrowed before the eyes, the front parallel and rectilinear at the sides; eyes prominent, at their own length from the base, the sides behind them rapidly convergent and arcuate to the neck; antennae rather more than half as long as the body; prothorax longer than wide, distinctly narrower than the head, convex, the surface impressed at the sides behind the middle, the median line narrowly smooth and slightly elevated; elytra as long as the prothorax and a fourth or fifth wider, scarcely as long as wide, the sides subparallel and broadly arcuate, the base moderately oblique at the sides, with the angles obtusely rounded; abdomen parallel, feebly arcuate laterally, only slightly wider than the elytra. Length 3.8 mm.; width 0.68 mm. Virginia...**monstrosus** Lec.

Form more slender, similar in color, lustre and sculpture to *monstrosus* but deeper black and less piceous; head longer than wide, less narrowed before the eyes, the latter less prominent but of the same size, the sides more strongly converging and arcuate behind them to the neck; antennae half as long as the body; prothorax narrower and more elongate, only just visibly narrower than the head, otherwise nearly similar; elytra much narrower, smaller in size, fully as long as wide, barely as long as the prothorax and only about a sixth wider, the sides feebly diverging, feebly arcuate, the base very oblique at each side with more obtuse shoulder angles; abdomen relatively broader, parallel, arcuate at the sides, much wider than the elytra. Male with sexual characters nearly as in *Stilicopsis*, the fifth ventral feebly, subtriangularly emarginate throughout the width, the sixth also more strongly and parabolically emarginate throughout the width, the seventh with a broad slit, narrowing toward base, the ligula broad, flat and truncate; female with the sixth ventral very broad, obtusely rounded in circular arc at tip. Length 3.9 mm.; with 0.65 mm. North Carolina (Asheville).

carolinae n. sp.

3 — Body more parallel, shining, uniform and very pale in coloration throughout; head nearly as in *monstrosus* but more finely punctulate and similarly impressed at each side of the front before the eyes, the latter rather smaller but equally prominent, at more than their own length from the base; antennae more than half as long as the body; prothorax as in *carolinae;* elytra parallel, arcuate at the sides, barely as long as wide, nearly as in *monstrosus*, as long as the prothorax and much wider; abdomen much narrower, parallel and almost straight at the sides and not wider than the elytra. Length 3.5 mm.; width 0.6 mm. Florida.

pallidus n. sp.

The conformation of the elytra is such as to suggest that the hind wings may not be fully developed in this genus,

though they are probably less vestigial than in *Stilicopsis*. Like the latter genus *Stamnoderus* occurs also in Central America. *Monstrosus* was originally assigned to *Sunius*.

Sunii.

This group or subtribe consists for the most part of the single genus *Sunius*, one of the most widely distributed and characteristic Paederid genera of the palaearctic and nearctic regions of the world. There are a few other genera, especially some peculiar to the neotropical regions, but none other appears to enter the fauna of America. In some features, such as the structure of the tarsi, antennae and the general habitus of certain forms, it apparently makes a closer approach to the Pinophilini than any other type of the Paederini, but it can be stated quite positively that any such resemblances are merely superficial and fortuitous, for in the structure of the prosternum, palpi, form of the head above and beneath and many other characters these two types of Staphylinidae are so widely separated as to indicate little or no phylogenetic relationship. The three genera which happen to be represented by material in my cabinet may be described as follows: —

Labrum quadridentate, advanced and arcuate toward the middle, the teeth broad and very strong, the median very much longer and more advanced than the outer and each bearing a short stiff tactile seta laterally near its acute apex, the outer teeth acute and nude; prosternum transversely and broadly tumid, finely, longitudinally and rather feebly carinate, the carina not crossing the transverse concavity just behind the apical margin; hind tarsi almost as long as the tibiae, slender, the basal joint about half as long as the remainder taken together; head as in *Sunius;* eyes smooth, the facets not convex; sculpture throughout very coarsely but not densely, simply punctate. Europe.....***Nazeris**

Labrum bidentate; eyes not smooth, each of the individual facets convex.. 2

2 — Labrum very short, broadly truncate, having a small median emargination, at each side of which there is a short tooth in the form of a slender truncated cone, a very small stiff tactile seta projecting axially from its extremity, the edge just without each tooth broadly and arcuately lobed; prosternum thrown up in an acute transverse ridge at some distance from the apical margin and separated therefrom by a narrow deep concavity, the median line with a fine but acutely elevated, somewhat uneven carina, which crosses the anterior concavity and attains the apical

margin; hind tarsi rather elongate but distinctly shorter than the tibiae, the basal joint much elongated but shorter than the remainder; head more or less broadly arcuato-truncate at base; sculpture only moderately coarse, the head and pronotum strongly punctato-reticulate, the elytra and abdomen asperately punctate; body more or less slender. Europe, Asia and North America..... **Sunius**

Labrum advanced and prominent toward the middle, the teeth moderate in size, broadly triangular, each with a longer and very slender seta projecting from its apex, the teeth separated by a moderate emargination, the transverse bottom of which bears two very minute approximate denticles, each of which has a long slender tactile seta projecting from its apex; just without each of the principal teeth there is a small, angulate emargination of the edge; prosternum long, nearly flat, not transversely tumid but with a very small cariniform elevation paralleling and close to the apical margin, the median line from this carina to the coxae strongly carinate; posterior tarsi short, very much shorter than the tibiae, the basal joint much elongated and as long as the entire remainder; anterior tarsi of the male thicker though scarcely dilated, the subapical joints somewhat obliquely united, — suggesting *Pinophilus;* head prolonged and strongly rounded at base; sculpture of the head and pronotum consisting of large reticulations of somewhat feeble lines, of the elytra of distinct, rather coarse and sparse impressed punctures, the abdomen obsoletely and very finely, sparsely punctulate. Central America..... ***Dibelonetes**

The diagnosis of *Nazeris* Fauv., has been taken from a female of *pallidipes* Reit., and that of *Dibelonetes* Sahl., from the male of a form which appears to constitute a variety of the Central American *fragilis* Shp., from San Marcos, Nicaragua.

I greatly regret not being able to study the genus *Ctenomastax* Kr., in order to determine its relationships, but this remark also applies to several other described genera.

Sunius Erichs.

Numerous species of this genus, frequently closely allied among themselves, occur throughout the continent and are everywhere plentiful in individuals. They have in common a very monotonous uniformity of habitus which, in connection with their small size, has caused them to be greatly neglected by systematists. The ornamental coloration of many forms is highly inconstant, especially so in the Texan *inconstans*, and, in *americanus* and some others, the abdomen,

which is generally of a dark testaceous with the last two segments black, may become wholly black, while in others, such as *discopunctatus*, the black color of the last two segments never shows any tendency to spead anteriorly. Although some are very variable, others, such as the *longiusculus* group, including the pale Sonoran species, appear to be quite constant in the limited ornamentation that they possess. The secondary sexual characters are very simple, consisting only of a small deep and acute cusp-like emargination of the sixth ventral and are but slightly diversified, rendering a satisfactory classification of the species very difficult; that suggested below is merely provisional and a much better one may be devised in the future. The twenty-one species in my cabinet may be known by the following characters:—

Species of the Atlantic coast to eastern Texas and including the entire Mississippi Valley..... 2
Species of the Sonoran province.....15
Species of the true Pacific coast fauna, extending inland to the northward as far as the Rocky Mountains.....17
2 — Head invariably black or piceous-black..... 3
Head always pale in coloration.....14
3 — Elytra pale, maculate with black, occasionally entirely black..... 4
Elytra completely pale in color, never maculate.....13
4 — Large species, not less than 4.4 mm. in length, the general color dark throughout..... 5
Small species, not exceeding 3.7 mm. in length when the abdomen is not excessively extended..... 8
5 — Elytra distinctly longer than the prothorax..... 6
Elytra equal to or shorter than the prothorax..... 7
6 — Parallel, feebly shining, black throughout, and legs and antennae pale, the elytra pale in apical fourth, the pale area increasing in length inwardly, occupying almost apical half on the suture and extending feebly along the latter to the base; sculpture of the head and pronotum rather coarse, dense and somewhat longitudinally confluent as usual; punctures of the elytra strong and rugose but distinctly separated, of the abdomen finer but strong, asperulate and arranged in the usual transversely wavy series; head large, slightly wider than the elytra, longer than wide, the eyes convex and prominent and at slightly more than their own length from the base; basal part behind them obtrapezoidal, with the angles broadly rounded; prothorax oval, much longer than wide, widest and broadly rounded at the sides at apical third; elytra distinctly longer than wide, narrowed gradually toward tip, obviously wider and longer than the prothorax; abdomen at base as wide as the elytral apex, slightly wider posteriorly. Male distinctly more slender than the female, with the head and prothorax larger when compared

with the elytra, the fifth ventral unmodified, the sixth with the acutely angulate incisure large, its opening about a third as wide as the segmental apex, its sides beaded and broadly arcuate posteriorly, its depth rather greater than the width. Length 4.6–5.0 mm.; width 0.65–0.7 mm. Virginia and Pennsylvania..... **prolixus** Er.

Parallel in form, resembling the preceding but a little stouter, the pale color of the elytral apex extending less acutely anteriorly upon the suture, the eyes more convex and prominent, situated at obviously more than their own length from the base, the elytra broader and less elongate, distinctly wider but only slightly longer than the prothorax, as wide as the head; abdomen at base slightly narrower than the elytral apex, gradually wider posteriorly, the punctures finer and denser than in *prolixus*. Male with the acutely angulate incisure of the sixth ventral very small, deeper than wide, its opening occupying scarcely a fourth of the segmental apex, its sides broadly rounding posteriorly into the segmental apex. Length 5.0 mm.; width 0.65 mm. Texas (Austin)..... **strigilis** n. sp.

7 — Form moderately slender, parallel, feebly shining, dark fusco-testaceous in color, the head, a large elongate-oval cloud on each elytron and the last two abdominal segments black, the latter color occasionally involving the entire venter; legs and antennae very pale as usual; head large, much wider than the elytra, the eyes rather small especially in the female, situated at very much more than their own length from the base, the basal parts of the head as in *prolixus;* prothorax large, oval, elongate, distinctly narrower than the head; elytra notably small, elongate, gradually narrowed toward tip, equal in width and length to the prothorax; abdomen at base as wide as the elytral apex, becoming gradually distinctly wider posteriorly, the sides straight as usual; punctures of the elytra and abdomen rather coarser than in *prolixus*. Male slightly more slender than the female but proportioned nearly the same, the acute incisure of the sixth ventral smaller than in *prolixus*, with its sides less broadly rounding posteriorly and its opening width decidedly greater than the depth. Length 4.6–5.0 mm.; width 0.7 mm. New York to Virginia (Fort Monroe). [=*prolixus* (Var.) Er.]. **americanus** n. sp.

Form narrower and more slender, parallel, dull in lustre throughout, black, the apical third of the elytra — becoming apical half on the suture — pale, the legs pale; head relatively rather small, scarcely as wide as the elytra, of the usual form, the eyes moderately convex and prominent and at more than their own length from the base, the sides behind them but feebly convergent, the angles less rounded than usual; prothorax scarcely visibly narrower than the head, but little longer than wide, otherwise of the usual form and sculpture; elytra scarcely longer than wide, very slightly wider than the prothorax and not quite as long; abdomen at base not quite as wide as the elytra and only slightly wider posteriorly. Length 4.4 mm.; width 0.58 mm. New York..... **linearis** Er.

8 — Elytra subequal in length and width to the prothorax..... 9

Elytra much wider and longer than the prothorax..... 10

9 — Body very slender, linear and parallel, densely sculptured throughout,

the punctures of the elytra relatively very coarse and rugose, those of the abdomen rather fine, black throughout, the prothorax sometimes obscurely rufescent, the elytra pale in apical fourth, the pale area not extending anteriorly along the suture except very slightly; head somewhat wider than the elytra; eyes convex, prominent, at about their own length from the base; prothorax but slightly elongate, very little narrower than the head, the sides rather strongly rounded behind apical fourth, thence unusually convergent and nearly straight to the broadly obtuse but distinct basal angles; elytra elongate, gradually narrowed toward tip, just visibly wider and only very slightly longer than the prothorax; abdomen gradually broader posteriorly. Male with the deep and acutely angulate incisure of the sixth ventral deeper than wide, moderate in size, with coarsely beaded sides and with the opening scarcely a third as wide as the segmental apex. Length 3.7 mm.; width 0.52 mm. Rhode Island (Boston Neck).....**spectrum** n. sp.

Body very slender and parallel, pale ochreo-testaceous in color, the head, a spot on each elytron somewhat variable in size but situated at the external margin behind the middle, and last two ventrals, black, in the last case extending anteriorly onto the fourth segment as a rule; head elongate, well developed, much wider than the elytra, the eyes moderately convex and at their own length from the base; prothorax much narrower than the head, slightly elongate, broadly rounded at the sides anteriorly and only moderately narrowed thence to the base; elytra elongate, but little narrowed posteriorly, just visibly wider and only slightly longer than the prothorax; abdomen slender, gradually broader behind. Male with the angulate notch of the sixth ventral moderate in size, more broadly triangular than usual, with the side margins widely beveled, the opening nearly one-half the segmental width and somewhat wider than the depth. Length 3.3–3.7 mm.; width 0.5 mm. Iowa.....**binotatus** Say

10 — Prothorax unusually small, much narrower than the head. Body moderately slender, black or piceous-black throughout, the elytra pale in apical two-fifths at the sides and half at the suture, the legs and antennae pale flavo-testaceous; head large and well developed, a little longer than wide, abruptly narrowed before the rather small but strongly convex eyes, this part only about four-fifths as wide as the part behind the eyes, the base broadly arcuato-truncate; prothorax very small, elongate, three-fourths as wide as the head, the sides broadly rounded anteriorly and thence unusually convergent to the base; elytra large, but little longer than wide, not evidently narrowed posteriorly, wider than the head, two-fifths wider and a third longer than the prothorax; abdomen much narrower than the elytra but wider than the prothorax, parallel, not distinctly wider posteriorly, rather coarsely asperate. Male with the notch of the sixth ventral rather large, much deeper than wide, somewhat parabolic in outline, the angle very narrowly rounded, the edges strongly beaded, the posterior angles slightly obtuse but scarcely rounded, the opening nearly a third as wide as the segmental apex. Length 3.3–3.7 mm.; width 0.65 mm. New York to Iowa.....**cinctus** Say

Prothorax well developed, only slightly smaller than the head.....11

11 — Head large, nearly as wide as the elytra and not very much longer than wide. Body rather stout, parallel, pale ochreo-testaceous in color, the head, a large internally rounded spot on each elytron extending from basal fourth to apical sixth and from the side margin to inner third, and the last two abdominal segments, black, the legs and antennae very pale as usual; head of the usual form, but little narrower before than behind the eyes, the latter moderate in size and prominence; prothorax three-fourths to four-fifths as wide as the head, longer than wide, of the usual form, the sides rather strongly rounded at apical fourth, thence moderately converging and straight to the broadly rounded basal angles; elytra large, only slightly elongate, feebly narrowed at tip, a third wider and longer than the prothorax; abdomen rather wide, gradually broader behind. Male unknown. Length 3.5 mm.; width 0.6 mm. Iowa..... **simulans** n. sp.

Head smaller, much narrower and more elongate, distinctly narrower than the elytra.....12

12 — Form slender, rather shining, pale ochreo-testaceous, with the head, a large internally rounded spot on each elytron from basal fourth to apical eighth and from the side margin to inner fifth, and the last three abdominal segments, black, varying to completely black, with the elytral suture feebly and narrowly rufescent, the legs and antennae always pale honey-yellow throughout; eyes strongly convex and prominent, at their own length from the base; prothorax short though longer than wide, the sides strongly rounded at apical fourth, thence strongly converging and straight to the basal angles, the side margins bristling with several long stiff black setae; elytra distinctly elongate, feebly narrowed at tip, two-fifths wider and longer than the prothorax; abdomen at base slender, distinctly narrower than the tip of the elytra, gradually slightly wider behind. Male with the fifth ventral feebly flattened along the middle, the acute cusp-like incisure of the sixth large, as deep as wide, with its sides broadly rounding outward posteriorly, the edge only anteriorly and finely beaded, the opening fully half as wide as the segmental apex. Length 3.3–3.7 mm.; width 0.5–0.55 mm. Texas (Galveston)..... **inconstans** n. sp.

Form slender, nearly as in the preceding, pale testaceous in color, the head, a larger but less elongate, internally rounded spot on each elytron, extending from basal third or two-fifths to apical eighth and from the side margin to inner fifth or sixth, and the last two abdominal segments, black; head relatively still narrower and more elongate, the eyes somewhat larger but less prominent and at rather more than their own length from the base, the sides behind them rather less converging to the broadly arcuato-truncate base; prothorax much more elongate, the sides at apical fourth more broadly rounded and thence only feebly converging to the basal angles, the side margins with only about two stiff setae, one anterior and the other near the base; elytra nearly similar but still more elongate, a third or fourth wider and longer than the prothorax; abdomen very slender, still more notably narrower at base than the apex of the elytra, gradually perceptibly wider behind. Male with the fifth ventral narrowly and feebly impressed along the median line, the notch of the sixth very wide, the widely diverging

arcuate sides extending almost throughout the width of the segmental apex, with the edge not beaded but broadly beveled, the apical angle not as acute as in the preceding and the opening width twice the depth. Length 3.7 mm.; width 0.53 mm. Mississippi (Vicksburg).

ornatellus n. sp.

13 — Elytra small, subequal in length and width to the prothorax. Form very slender and linear, almost perfectly parallel, pale ochreo-testaceous in color, the head and the last two to three of the abdominal segments black; head of the usual form, distinctly longer than wide, well developed and distinctly wider than the elytra, the eyes moderate in size and prominence; prothorax relatively large, longer than wide, sensibly narrower than the head, the sides rather broadly rounded at apical third or fourth, thence strongly converging and nearly straight to the basal angles; elytra small, slightly elongate, only very slightly narrowed at apex, equal in width to the prothorax and only just visibly longer; abdomen rather broad, at base equal in width to the elytral apex, and, posteriorly, wider than any part of the elytra. Male with the fifth ventral narrowly and very feebly impressed along the middle, the notch of the sixth moderately large, its sides broadly flaring, arcuate and broadly beveled, its opening equaling half of the segmental width and its apical angle moderately acute. Length 3.0–3.7 mm.; width 0.5–0.52 mm. Iowa..... **brevipennis** Aust.

Elytra larger, much wider and longer than the prothorax. Form stouter, subparallel, pale ochreo-testaceous, the head and last two abdominal segments black or blackish; head smaller, not quite as wide as the elytra, the eyes much less convex and scarcely at all prominent, at barely their own length from the base, the converging sides short behind them, the angles broadly rounded; prothorax distinctly narrower than the head, only slightly elongate, the sides rather broadly rounded at apical fourth, thence but moderately converging and nearly straight to the broadly arcuate basal angles; elytra slightly elongate, sensibly narrowed near the apex, about a third wider and longer than the prothorax; abdomen unusually broad, slightly wider posteriorly but everywhere narrower than the elytra, rather finely, closely asperulate. Male unknown. Length 3.4 mm.; width 0.6 mm. Virginia (Norfolk).

fusciceps n. sp.

14 — Form very slender, subparallel, pale ochreo-testaceous throughout, except the last two abdominal segments, which are black; head rather small, elongate, distinctly narrower than the elytra, the eyes convex, prominent and at distinctly more than their own length from the base, the sides behind them rather strongly converging to the moderately rounded basal angles; prothorax but slightly elongate, obviously narrower than the head, the sides rather broadly rounded somewhat behind apical fourth, thence moderately converging and nearly straight to the broadly rounded basal angles; elytra much elongated, distinctly and gradually narrowed toward tip, a third or fourth wider and two-fifths longer than the prothorax; abdomen moderately slender, at base slightly narrower than the elytral apex and but little wider near the tip. Male sensibly more slender than the female throughout the body and head, the fifth ventral unmodified, the sixth with a very acute cusp-

like notch, having broadly arcuate, moderately flaring and broadly beveled sides, the opening rather wider than the depth and nearly half as wide as the segmental apex. Length 3.9 mm.; width 0.53 mm. Rhode Island to Iowa, Nebraska and Texas. [=*centralis* Aust.].
discopunctatus Say

15 — Body slender, parallel, black or piceous-black in color throughout, the legs and antennae pale; head elongate, nearly or quite as wide as the elytra, the eyes moderate in size and prominence, at fully their own length from the base, the sides behind them at first feebly converging, then broadly rounded into the more feeble arcuate base; prothorax oval, slightly longer than wide, visibly narrower than the head, the sides broadly rounded anteriorly, thence only just visibly convergent and very feebly arcuate to the broadly rounded basal angles, the sides with an erect seta anteriorly and posteriorly; elytra moderate in size, elongate, distinctly narrowed toward tip, a fourth or fifth wider and longer than the prothorax; abdomen moderately slender, but slightly wider posteriorly. Male unknown. Length (strongly extended) 4.7 mm.; width 0.6 mm. New Mexico (Albuquerque) ..... **zuni** n. sp.

Body slender, pale ochreo-testaceous in color throughout, the last two ventrals never more than very slightly darker in color and never black or blackish; head as wide as the elytra or extremely nearly so, of the usual form; eyes unusually large but only very moderately convex, at a little less than their own length from the base, the latter broadly subtruncate with the angles broadly rounded; prothorax rather small, very much narrower than the head, evenly ovoidal, broadly rounded anteriorly, the sides thence rather strongly converging and nearly straight to the subcircularly rounded base, the side margins with a single seta anteriorly and posteriorly; elytra two-fifths to one-half wider and longer than the prothorax; longer than wide, narrowed only very near the apex; abdomen slender, at base much narrower than the elytral apex, gradually perceptibly wider behind. Male with the fifth ventral unmodified, the sixth with a very acutely angulate notch, having nearly straight sides which flare into the apex through less than usually arcuate angles, the opening not more than a fourth as wide as the segmental apex and a little narrower than the depth. Length 4.2 mm.; width 0.55 mm. Arizona (Holbrook and Peach Springs) and New Mexico, — Mr. Wickham ..... **arizonianus** n. sp.

Body pale ochreo-testaceous throughout, the abdomen with the last two segments black or blackish; prothorax broadly rounded at the sides anteriorly, the side margin generally with two strong tactile setae anteriorly and one near the base 16

16 — Form very slender; head elongate, slightly narrower than the elytra, the eyes only moderate in size but strongly convex and prominent, at obviously more than their own length from the base, the basal part of the head behind them semicircularly rounded, with but slight traces of median truncature; prothorax much narrower than the head, elongate-oval, the sides moderately converging from the broadly rounded anterior part to the subcircular base; elytra slightly elongate, gradually and distinctly narrowed toward tip, two-fifths wider but scarcely a third longer than the prothorax; abdomen very slender, at base distinctly

narrower than the elytral apex and but just perceptibly dilated posteriorly. Male with the fifth ventral unmodified as usual, the very acute notch of the sixth cuspidiform, with its sides gradually more flaring posteriorly and broadly arcuate, the opening about half as wide as the segmental apex but scarcely as wide as the depth. Length 3.9 mm.; width 0.58 mm. California (Yuma) and Arizona (Tucson and Sta. Rita Mts.) ..... **tenuiventris** n. sp.

Form nearly similar throughout to the preceding but obviously stouter in every part, the eyes similarly moderate in size but very convex and prominent, the basal part of the head behind them more broadly arcuato-truncate at base and not semicircularly rounded; prothorax less elongate but nearly similar in form; elytra slightly elongate, somewhat wider than the head but less obviously so than in *tenuiventris*, two-fifths wider and longer than the prothorax; abdomen moderately slender, at base slightly narrower than the elytral apex, distinctly dilated behind and very much more obviously so than in the preceding species. Male not at hand, the comparisons made from females exclusively. Length 4.1 mm.; width 0.65 mm. Texas (El Paso) and Arizona (locality not recorded) ..... **similis** Aust.

17 — Elytra much longer than the prothorax; abdomen never as wide as the elytra, moderately punctato-asperate, the notch of the sixth ventral in the male rather large, cuspidiform; body invariably slender, generally pale in color; antennae filiform, only very slightly thicker toward tip as usual 18

Elytra subequal in length to the prothorax, the body stouter, the abdomen generally black, coarsely punctato-asperate and much wider than the elytra; notch of the sixth ventral in the male very small, triangular; antennae strongly incrassate toward the tip 19

18 — Abdomen broader, much wider than the prothorax. Parallel, dark rufo-testaceous in color throughout, the last two abdominal segments nubilously blackish; head elongate, of the usual form, equal in width to the elytra, the eyes moderate in size, very convex and prominent, at more than their own length from the base, the basal part broadly obtrapezoidal, with broadly rounded angles and arcuato-truncate base; prothorax rather small, longer than wide, much narrower than the head, the sides obtusely angulate and only slightly rounded anteriorly, thence rather feebly converging and nearly straight to the broadly subcircular base; margins with a black seta anteriorly and posteriorly; elytra longer than wide, parallel, only slightly narrowed at the immediate apex, fully a third wider and longer than the prothorax; abdomen at base much narrower than the elytra, gradually enlarged toward tip. Male with the fifth ventral unmodified, the acutely angulate notch of the sixth having gradually more widely diverging simple arcuate sides, the opening nearly three-fifths as wide as the segment and wider than the depth. Length 3.25 mm.; width 0.5 mm. Montana (western), — Mr. Wickham ..... **sectator** n. sp.

Abdomen narrower, not distinctly wider than the prothorax even posteriorly. Parallel, dark brownish-testaceous in color throughout, the head generally slightly darker than the prothorax and elytra and the abdomen black toward tip; head moderately developed, perceptibly

elongate, slightly narrower than the elytra, the eyes at scarcely more than their own length from the base, convex and prominent; basal part behind them broadly obtrapezoidal, the angles well rounded as usual; prothorax small, much narrower than the head, slightly longer than wide, the sides rather narrowly rounded at apical third, thence distinctly converging and nearly straight to the rounded basal angles, the side margins with a tactile seta anteriorly and posteriorly; elytra large and much elongated, one-fourth longer than wide, with the sides broadly arcuate, gradually feebly converging toward tip, two-fifths to a half wider and three-fifths longer than the prothorax; abdomen at base not evidently wider than the prothorax, becoming somewhat dilated posteriorly. Male with the fifth ventral unmodified, the sixth with the very acute cusp-like notch as deep as wide, its sides gradually more widely flaring and broadly arcuate throughout, the opening a third as wide as the segmental apex. Length 3.65 mm.; width 0.6 mm. California (San Diego to Humboldt and Lake Tahoe), Nevada (Reno), Washington State (Spokane) and British Columbia (Victoria). [= *trisignatus* Boh.(?)].....**longiusculus** Mann.

19 — Head equal in width to the elytra, each elytron maculate with piceous. Body stout, parallel, black — or paler from immaturity, — the elytra alone pale flavo-testaceous, each with a small, posteriorly and inwardly oblique piceous cloud at its centre, the legs and antennae very pale as usual; head large, only very slightly longer than wide, the eyes rather small but convex and prominent, at about one-half more than their own length from the base, the sides behind them only very slightly converging, then broadly rounding into the broadly arcuato-truncate base; prothorax rather small, very much narrower than the head, longer than wide, the sides broadly rounded anteriorly, thence moderately converging and very slightly arcuate to the subcircularly rounded base, the side margins with the usual tactile seta anteriorly and posteriorly but small; elytra subquadrate, scarcely as long as wide, not narrowed at tip, the sides feebly diverging from the base and nearly straight, two-fifths wider than the prothorax and very slightly longer; abdomen broad, at base distinctly narrower than the elytral apex especially in the male, at the apex of the fifth segment just visibly wider than any part of the elytra. Male with the fifth ventral unmodified, the sixth broadly arcuato-truncate at apex, with a small and acutely angulate, abruptly formed median notch, visibly deeper than wide, with its sides straight and the posterior angles slightly obtuse but only very narrowly rounded, the opening rather less than a fifth as wide as the segmental apex. Length 3.6 mm.; width 0.7 mm. Nevada (Reno) and California (Lake Tahoe to Sta. Clara).....**robustulus** n. sp.

Head much wider than the elytra in both sexes, the elytra immaculate. Body moderately stout in form, black, the prothorax generally more or less piceous, the elytra brownish-testaceous, the legs and antennae pale; head large, slightly elongate, very much wider than the elytra, the eyes moderately large and prominent, at but little more than their own length from the base, otherwise nearly as in *robustulus;* prothorax elongate-ovoidal, very much narrower than the head, the sides very broadly rounded anteriorly, moderately converging and broadly arcuate

to the rounded base; elytra small, distinctly longer than wide, scarcely more than a fourth wider than the prothorax and very slightly longer, the sides subparallel, the basal angles unusually broadly rounded; abdomen broad, at base but little narrower than any part of the elytra, distinctly wider posteriorly. Male with the sixth ventral moderately broad, arcuato-truncate, the acutely triangular notch small, somewhat deeper than wide with its sides straight, its posterior angles obtuse and slightly rounded with the opening between a fourth and fifth as wide as the segmental apex. Length 3.3 mm.; width 0.6 mm. California (Sta. Cruz to Humboldt Co.).....**californicus Aust.**

The coloration of the head in mature individuals appears to be sufficiently constant to be utilized as a dichotomous character, for in those species represented before me by large series, such as *discopunctatus*, *longiusculus*, *cinctus*, *prolixus*, *inconstans* and others, I have found it to be unvarying, no specimen of *discopunctatus*, for example, ever has the head in the least dusky. The only doubt that need arise may be due to immaturity of the black-headed species, but, as the head and abdominal apex seem to be the first somites to mature, there will probably be but few cases of uncertainty even from this cause. The genus is abundantly represented in New England and the Atlantic regions generally and the forms run together rather closely, forming a difficult study. *Trisignatus* Boh., is probably the same as *longiusculus* Mann., as the latter occasionally has a large feeble internally rounded nubulosity on each elytron, which may sometimes become more distinct.

In considering the species of the table in accordance with their natural affinities, it should be stated that *prolixus*, *americanus*, *linearis*, *strigilis*, *spectrum*, and *zuni* form one group, *cinctus* a very distinct group by itself, as shown by general form and by the nature of the secondary sexual characters, *binotatus*, *ornatellus*, *inconstans* and *simulans* another for the same reason, *discopunctatus*, *fusciceps*, *brevipennis*, *arizonianus*, *tenuiventris*, *similis*, *sectator* and *longiusculus* another, and, finally, *robustulus* and *californicus* form a remarkably isolated group, peculiar to the true Pacific coast fauna. *Discopunctatus* is very abundant everywhere east of the 100th meridian and represents in these regions the Pacific coast *longiusculus*, which has much larger elytra,

a darker general coloration and differs in several other characters. Coloration seems to be most constant in the *longiusculus* group and most unstable in the *binotatus* group. The beetles of this genus run with very great rapidity when disturbed, being relatively more agile in proportion to their size than any other Paederids known to me.

Echiasteres.

The genus *Echiaster*, and some others more or less closely allied, form a group peculiar to the American continents and greatly developed in the tropical regions of South America. The Echiasteres are related to the Sunii by the closed anterior coxal cavities, the corneous floor of which abuts closely against the flanks of the pronotum, in certain features of general habitus and sculpture, in the general structure and vestiture of the maxillary palpi and in the united gular sutures, but differ greatly in the very slender filiform tarsi with the fourth joint not lobed, in the extremely short and posteriorly flexile antennae, the apex of the very short basal joint being emarginate posteriorly, in certain structural peculiarities of the mentum and in several other directions. The sculpture is not very coarse but extremely dense, so that the lustre is densely dull, and the vestiture is in the form of very short, thick, closely recurved pale hairs, entirely inconspicuous except under considerable magnifying power. The two genera known thus far to enter our territories may be defined as follows: —

Fifth and sixth ventral segments prolonged, narrow and subtubulate; eyes very large and conspicuous, completely nude; body rather small and moderately slender, the head well developed, orbicular, the labrum short, broadly rounded at tip, with a small angulate median emargination and four equal small and broadly angulate teeth; antennae but little longer than the head, the funicle slender at base, rapidly incrassate distally; mentum small, transverse, the sides elevated, forming ridges which are prolonged before the apex as slender aciculate processes, each bearing a short axial apical seta; labial palpi small, slender, the maxillary well developed with the second joint moderately stout, arcuate, short and nude, the third oval, feebly compressed, finely and densely pubescent, more arcuate anteriorly than posteriorly and longer than the second, the fourth small, short, obliquely conical and pubescent, very inconspicuous; neck very slender, about a sixth as wide as the head; protho-

rax small, elongate, suboval; prosternum well developed before the coxae, evenly convex, not carinate; elytra parallel, well developed; abdomen at base as wide as as the elytra, long, gradually tapering; legs very slender, rather short, the anterior tarsi not in the least dilated, the posterior very slender, filiform, two-thirds as long as the tibiae, the joints cylindric, closely united, the basal joint subequal in length to the next two together and rather longer than the fifth; claws small. Warmer parts of North and South America.....**Echiaster**

Fifth ventral not much elongated, wider than long, the sixth small; eyes very small, minutely setulose; sculpture and lustre nearly as in *Echiaster;* body very small in size, slender; head well developed, oblong, sinuato-truncate at base; labrum quadridenticulate, short, the median teeth longer than the outer; antennae extremely short, not as long as the head, nearly as in *Echiaster;* mentum small, transversely subquadrate, convex, the side margins bisetose, not distinctly elevated or produced, the anterior margin apparently finely denticulate at each side; labial palpi very small, slender, the maxillary moderately developed with the second joint arcuate, inflated distally, subglabrous, the third longer than the second, securiform with its anterior side strongly arcuate in the middle, the posterior nearly straight, the fourth joint extremely minute and abbreviated but slender and aciculate; neck relatively less slender, scarcely a fifth as wide as the head; prothorax small, with more pronounced angles than in *Echiaster*, the elytra nearly similar, the prosternum well developed before the coxae, carinate posteriorly; legs short and slender, the tarsi nearly as in *Echiaster.* Southern Atlantic and Gulf States.....**Leptogenius**

The above diagnosis of *Echiaster* is drawn from our only species, the very small *ludovicianus*, to be described below, and it is probable that other genera and subgenera are represented among the numerous Brazilian species.

Echiaster Erichs.

The principal characteristic features of this genus are the narrow, prolonged and frequently subtubuliform fifth and sixth ventral segments and the extremely large eyes, which are even more conspicuous or relatively larger than in some species of *Stenus*. The only representative within our boundaries may be described as follows: —

Form slender, moderately convex, densely dull in lustre, pale red-brown in color throughout, the prothorax usually rather paler than the rest of the body; head as wide as long, the eyes convex, prominent, at less than half their own length from the base and half as long as the entire head and labrum; sides behind them converging and strongly arcuate

for a short distance to the rather broadly arcuato-truncate base; prothorax less than three-fifths as wide as the head, distinctly elongate, the sides subangularly rounded at apical two-fifths, the base nearly twice as wide as the apex, the surface slightly elevated along the middle; elytra quadrate, parallel, as long as wide, equal in width to the head, slightly longer than the prothorax and very much wider, the surface rather depressed, somewhat coarsely, very densely, rugosely and granularly punctate, the suture not at all margined; abdomen at base as wide as the elytra, still more coarsely, closely and rugosely punctate, the last two segments becoming much more finely so and with the side margin greatly reduced, the segments not impressed at base. Male with the fifth ventral unmodified, the sixth with an abruptly formed, subparabolic emargination, deeper than wide, about a third as wide as the apex, with its bottom broadly rounded; ligula of the seventh white in color and submembranous, subcylindric, slender, with the apex slightly expanded and truncate; female having the sixth ventral obtusely and evenly rounded at tip. Length 2.8 mm.; width 0.5 mm. Mississippi (Vicksburg) and Louisiana (Bayou Sara).

ludovicianus n. sp.

The sexual characters are somewhat obscured in the only male at hand by a hardened exudation filling the emargination of the sixth ventral, so that I am not certain of the entire correctness of the description; the white submembranous ligula, however, is clearly defined and is radically different from anything else in the Paederini that I have observed.

Leptogenius Csy.

This genus is also represented by a single species thus far, readily distinguishable from the preceding by its still smaller size and more slender form, small eyes which are setulose and not nude, oblong, and not orbicular, basally sinuato-truncate head and normal terminal segments of the abdomen; it may be briefly described as follows: —

Body minute, slender, subparallel, only feebly convex, densely dull in lustre and closely, somewhat coarsely and rugosely punctulate, pale red-brown in color, the elytra generally darker except toward the sides and base; head well developed, longer than wide, parallel at the sides, the angles rounded, the eyes rather coarsely faceted and at between two and three times their own length from the base, slightly convex and prominent; antennae not quite as long as the head; prothorax small though fully three-fourths as wide as the head, about as long as wide, the sides subangulate and narrowly rounded at apical fourth, the base

rather more than twice as wide as the apex, the median line but very feebly prominent; elytra quadrate, parallel with the sides feebly arcuate, as long as wide, about a third wider and nearly a fourth longer than the prothorax, the elytra and abdomen sculptured as in *Echiaster*. Male with the sixth ventral broadly rounded at tip, truncate toward the middle, otherwise unmodified; female having the sixth ventral broadly rounded or subangulate at tip. Length 1.7 mm.; width 0.3 mm. Texas (Galveston) to North Carolina (Asheville).

brevicornis Csy.

The extreme simplicity of the male sexual characters, as described above, leads me to surmise that the specimens held to represent the male may really be a slightly modified female; more material will be necessary to decide this however. This species seems to have a very wide distribution, as no differences, even of a varietal nature, can be observed between the original Galveston types and the Asheville specimens before me. It is one of the smallest of known Paederids.

NOTES.

1 — Bibliography is omitted in the present paper for various reasons, but references to the original descriptions, in the case of the older authors, can be obtained from the Munich catalogue, and, to those published between the date of that work and 1883, from the catalogue of Duvivier, issued by the Entomological Society of Belgium. But few species have been described since the latter date and the bibliographic references of these can be obtained very readily from the Zoological Record. There is one exception, however, which relates to the species of Paederi and Sunii described by Austin, to which I can find no bibliographic reference whatever, either in the Zoological Record or in the catalogue of Duvivier, and I am wholly uninformed as to their place of publication. The representatives of those species in my cabinet have been identified from the original types, which are in the cabinet of LeConte at Cambridge, Mass.

2 — In the Henshaw list of 1885, one of Kirby's species is appended to the genus *Lathrobium* under the name *puncticolle*. I have not been able to consult the original description, but the name may imply some relationship with the genus *Lobrathium*, as a mere surmise.

ERRATA.

Page 69 — 6th line from top, *for* " nineteen " *read* twenty-six.
Page 146 — bottom line, *for* **" horridual "** *read* **horridula.**

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THE MOLLUSCAN FAUNA OF McGREGOR, IOWA.

FRANK COLLINS BAKER.

Issued May 9, 1905.

THE MOLLUSCAN FAUNA OF McGREGOR, IOWA.*

FRANK COLLINS BAKER.

The 1904 Field Day of the Chicago Academy of Sciences was held at McGregor, Iowa, where several members of the Academy spent a profitable week during the month of July studying the Fauna, Flora and Geology of this interesting region. The ecology of the region is of more than usual interest. Here are high bluffs more than two hundred feet in height and several miles apart, between which flows the great Mississippi River, whose broad expanse of water, here almost a mile in width, rolls irresistibly on its journey to the Gulf. The river is dotted with islands covered with foliage and many of these islands have long sand or mud bars on the lower ends which afford an inviting refuge for many mollusks, particularly the Unionidae. Opposite South McGregor, which is the locality more particularly studied, there are several islands which have formed a perfect atoll, the narrow inlet and wider interior basin being faithfully represented. Such a station is especially adapted to the growth of mud-loving mollusks, such as Anodonta, Vivipara and some thin-shelled Lampsilis.

The geology of the neighborhood of South McGregor is notably interesting. The bluffs are made up of sandstone, limestone and shale, the strata belonging to the Ordovician Age and including the Lower Magnesian Limestone, St. Peter's Sandstone, Trenton Limestone, Galena Limestone and, farther inland, the Marquoketa shales.

Land shells seemed unaccountably scarce, the abundance of limestone and deciduous trees affording, apparently, desir-

* Presented by title to The Academy of Science, April 17, 1905.

able habitats. The smaller species seemed fairly abundant, but the larger forms, with the exception of Pyramidula alternata, were few and far between. On the Wisconsin shore, where the river valley extends for a considerable distance before reaching the bluff, the land snail fauna is said to be more varied and abundant. We had no time for investigating this side of the river and I cannot therefore speak with any degree of accuracy concerning this territory.

The craze for pearls, as well as the more legitimate fishing for pearl button material, has well-nigh exhausted the mussel beds in this region, and the huge piles of mussels on the Wisconsin shore near Prairie du Chien bear silent but potent witness to the fact that the mussel fishery in this part of the river has seen its best day. We were told that several years ago as many as fifteen hundred boats were engaged in the mussel fishery but at the present time only about one hundred were engaged in this work.

The fishermen spend the mornings in securing the clams by means of the four-pronged "crowfoot" hooks, which, to the number of a hundred or more, are attached by stout rope to a long iron pipe or bar. The ropes are placed some four or five inches apart and as many as four hooks may be strung, six inches apart, on a single rope. The method of use is to lower this crowfoot dredge from the boat and drag it over the mussel bed. As the mussels lay in their natural position, with their shells slightly gaping, the prong of the hook enters between the two valves of the shell and the mussel closes upon the hook and is thus pulled up. The writer has seen twenty-five mussels caught in a single haul and the fishermen say that over one hundred are sometimes obtained at a single haul. Most of the shells are taken to the neighborhood of Prairie du Chien where a number of the men have erected cabins and clam sheds near the St. Paul railroad tracks. At this place twenty to thirty boats may be seen drawn up on the shore at noon and nearly a dozen rude stoves may be seen boiling out the meat in the shells. When the clams have been boiled they are thrown on a wooden bench and the meat is carefully looked over for any possible pearls. The writer

was permitted to buy about a bushel and a half of clams for two dollars but was cautioned not to take a pearl, only the shells being salable. It was curious to see the value placed upon an unopened clam. Offers of three, four or five dollars for a small lot of freshly-caught, living clams were scornfully refused. The value placed upon distorted or diseased clams, called by the fishermen "cripples," was fairly ludicrous. They have a belief that a cripple is almost always sure to contain a pearl and they are not always disappointed in this belief, for many distorted individuals do contain fine pearls. Two beautiful pearls were shown the writer by a resident of McGregor, one nearly a third of an inch in diameter and of exquisite luster and color, being valued at fifteen hundred dollars, and another smaller one at about three hundred dollars. These had been recently secured from the clams near McGregor.

The writer believes, after a careful study of the mussel fishery at this place, that the large number of cripples encountered is due largely to the crowfoot dredge. Many shells have the valves curiously distorted, as though broken by accident, and it seems quite probable that young mussels which were broken by the hook should have grown and become distorted in consequence of the injury. The broken valves would also offer an effective means of communication to the inside of the clam, and sand, the eggs of mollusks and parasitic animals could easily find entrance and produce further distortion, or, perchance, a pearl or two.

A sad and suggestive feature of the mussel fishery at this place is the waste of shells which are of no value either for their shells or as containing pearls, and are thrown upon the shore when the catch is picked over. These consist of Anodonta, thin-shelled Lampsilis, Alasmidonta and any small or thin-shelled clam. In some places the shore is fairly paved with these shells. Such wanton destruction grieves the true naturalist.

It may be of interest to tabulate some of the species which contained the greatest amount of abnormal pearly matter and

those that contained none, or only traces of pearly secretions.

Pearl abundant.	Pearl absent.
Lampsilis ventricosa.	Lampsilis ligamentina.
Symphynota complanata.	Lampsilis recta.
Quadrula trigona.	Plagiola securis.
Quadrula ebena.	Plagiola elegans.
	Unio gibbosus.
	Quadrula plicata.
	Quadrula pustulosa.

The Unio fauna was numerous in individuals but only thirty-five species were secured. It is probable that a more extended study, covering several years, would bring to light many additional species.

My thanks are due to Mr. A. B. Wolcott for collecting many of the land shells, to Mr. W. H. C. Elwell for several shells and a number of rough pearls, to Mr. Williams and to Mr. W. K. Higley for assistance in collecting small land snails on the hills west of McGregor, and to Mr. F. M. Woodruff for assistance in collecting the Unionidae. The small land snails, Strobilops, Bifidaria, Helicodiscus and Zonitoides were collected near a spring which issued from the shale on the side of a hill about two miles northwest of McGregor, the land belonging to Mr. Williams.

Catalogue of Species.

Class **PELECYPODA.**

Family Unionidae.

Lampsilis ventricosa Barnes.

Common. Nearly half the specimens of this species contained pearly secretions of various sizes; these were mostly confined to the posterior end and were more abundant about the posterior adductor muscle. One specimen has a knife-like ridge one and one-fourth inches long near the muscle scar.

A single specimen has an irregular piece of shelly matter extending from the anterior border of the posterior adductor muscle scar 42 millimeters into the central cavity of the shell, which measured 110 millimeters in length and 60 millimeters in breadth. The shelly matter is hollow and contained mud. 15 millimeters anterior to this curious appendage a rounded pearl has been formed. Another specimen has the whole posterior end flattened.

LAMPSILIS LUTEOLA Lamarck.

Common. One out of three specimens contained pearly matter or baroque pearls.

LAMPSILIS LIGAMENTINA Lamarck.

One of the most common shells. Out of fifty-one specimens only four contained indications of pearly secretions. The nacre varies from white to pink and salmon. Distorted specimens of this species are common.

LAMPSILIS ORBICULATA Hildreth.

Apparently rare.

LAMPSILIS ANODONTOIDES Lea.

Common. Twenty-five per cent contained pearls.

LAMPSILIS FALLACIOSA (Smith) Simpson.

Not common, apparently. The specimens from this locality are brightly rayed; one out of six contained pearly matter.

LAMPSILIS RECTA Lamarck.

Common. Large and fine. Only two specimens were seen with pearly matter. The range of variation in nacre is marked. Of fifteen specimens one was white, one salmon, three mixed white and purple and ten were deep purple.

LAMPSILIS ALATA Say.

Common. A majority of the specimens contained pearly secretions. One specimen had two pear-shaped lavender pearls in the center of the shell near the hinge. Distortions consisted principally of the flattening of one valve.

Lampsilis gracilis Barnes.
Common.

Obovaria ellipsis, Lea.
Common. Fifty per cent of this species bore pearly secretions; one specimen contained two pearls in the umbonal cavity.

Plagiola securis Lea.
Not common. Pearly secretions rare.

Plagiola elegans Lea.
Common. No specimens were seen with pearly secretions.

Tritogonia tuberculata Barnes.
Common. Fifty per cent bore pearly secretions. Only one specimen was distorted.

Obliquaria reflexa Rafinesque.
Common. Seventy-five per cent contained pearly secretions.

Strophitus edentulus Say.
Common. Pearly secretions rare. Nacre pure white to brilliant salmon. Distortions rare.

Anodonta grandis Say.
Common.

Anodonta grandis Say, Var. gigantea Lea.
Common.

Anodonta corpulenta Cooper.
Common. Diseased shells frequent.

Arcidens confragosus Say.
Common. Pearly secretions rare. Twenty-five per cent of this species were distorted.

Symphynota costata Rafinesque.
Common. Nacre varying from white to salmon. No pearly secretions.

SYMPHYNOTA COMPLANATA Barnes.

Common. Eighty-seven per cent of the specimens of this species contained pearls or pearly secretions.

MARGARITANA MONODONTA Say.

Very rare. Only two specimens were obtained from the gigantic quantity of shells held by the fishermen, who call this species the spectacle case.

UNIO GIBBOSUS Barnes.

Apparently not abundant. The nacre of the specimens from this locality varies from white and lavender to deep purple. No evidences of pearly secretions were found in these shells.

UNIO CRASSIDENS Lamarck.

Common. One small injured shell was collected.

PLEUROBEMA AESOPUS Green.

Apparently rare as but one specimen was found.

QUADRULA PLICATA Say.

Common. No pearly secretions were found in the shells of this species, but several distorted shells were collected.

QUADRULA HEROS Say.

Common. The nacre of this species varies from white to white tinged with pink. Only a very few specimens showed evidences of abnormal pearly secretion.

QUADRULA LACHRYMOSA Lea.

Not common. The specimens obtained are rounder than normal lachrymosa. Only five specimens were obtained and none of these showed pearly secretions.

QUADRULA MATANEVRA Rafinesque.

Only half a valve of this species was secured.

QUADRULA PUSTULOSA Lea.

Very common. Pearly secretions rare. These shells, of which a large number were obtained, well illustrate the large

variety which this species exhibit in the pustulosity of its shell, the extremes being perfectly smooth and densely pustulose. Distortions rare.

QUADRULA PUSTULATA Lea.

Not common. 25 per cent contained pearly secretions.

QUADRULA TRIGONA Lea.

Very common. The nacre of the specimens from this locality varies from white to salmon-pink. Pearly secretions are common, at least 70 per cent containing abnormal pearly matter. One specimen contained an erect, sharp piece of pearly matter extending across the middle of the anterior muscle scar.

QUADRULA OBLIQUA Lamarck.

Very rare. Only one specimen secured.

QUADRULA EBENA Lea.

Very common. This is the pearl shell par excellence to the mussel fishermen. Of those secured, 25 per cent contained pearly secretions and one specimen had the left valve badly diseased. Distortions rare.

QUADRULA GRANIFERA Lea.

Apparently rare. Only two specimens were obtained. The nacre is of a peculiar deep copper color.

Class **GASTROPODA**.

Family VIVIPARIDAE.

VIVIPARA INTERTEXTA Say.

Common in the Mississippi River.

VIVIPARA SUBPURPUREA Say.

Common.

CAMPELOMA INTEGRUM De Kay.

Common.

CAMPELOMA SUBSOLIDUM Anthony.
Common.

Family PHYSIDAE.

PHYSA GYRINA Say.
Common in creek near Pictured Rocks.

Family PUPIDAE.

STROBILOPS VIRGO Pilsbry.
Common.

BIFIDARIA ARMIFERA Say.
Only one specimen collected.

Family SUCCINEIDAE.

SUCCINEA RETUSA Lea.
Common.

Family HELICIDAE.

POLYGYRA CLAUSA Say.
Common.

POLYGYRA THYROIDES Say.
Apparently not common.

POLYGYRA MULTILINEATA Say.
Not common.

POLYGYRA PROFUNDA Say.
Not common.

POLYGYRA HIRSUTA Say.
Only two dead specimens found.

POLYGYRA MONODON Var. fraterna Say.
Fairly common.

Family CIRCINARIIDAE.

CIRCINARIA CONCAVA Say.
Fairly common.

Family Endodontidae.

Pyramidula alternata Say.
Common.

Helicodiscus lineatus Say.
Common.

Family Zonitidae.

Zonitoides arboreus Say.
Very common.

Issued May 9, 1905.

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1905

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Transactions of The Academy of Science of St. Louis.

VOL. XV. NO. 4.

PARAPHORHYNCHUS A NEW GENUS OF KINDERHOOK BRACHIOPODA.

STUART WELLER.

Issued May 9, 1905.

PARAPHORHYNCHUS, A NEW GENUS OF KINDERHOOK BRACHIOPODA.*

STUART WELLER.

In the Kinderhook faunas of the Mississippi Valley there are several species of rhynchonelloid shells which have always been referred either to the genus *Rhynchonella* or *Pugnax*, which seem to possess characters of good generic value. There has always been more or less confusion in the specific determination of these forms, *Rhynchonella striatocostata* being the only one which has ever been adequately described, and even this one has been confused with *Pugnax missouriensis* which is entirely distinct and belongs to a different genus. All of these shells are of rather large size, are coarsely plicate, usually with simple plications, and have the entire surface covered with very fine radiating striae. Internally they resemble *Camarotoechia* far more closely than *Pugnax*, the genus to which they were referred by Hall and Clarke. Because of the finely striated surface of the shells and their rhynchonelloid form, they may be called *Paraphorhynchus*.

Three species of the genus are recognized in the Kinderhook strata of the Mississippi valley, *P. elongatum* n. sp., a form which has not hitherto been noticed, *P. striatocostatum* M. & W., and *P. transversum* n. sp., which has been referred to both *P. striatocostatum* and *Pugnax missouriensis* in the literature. In addition to these, two forms from the Waverly beds of Warren County, Pennsylvania, have been described by Simpson† as *Rynchonella medialis* and *Rhynchonella striata* which may be placed with the three species from the Mississippi Valley.

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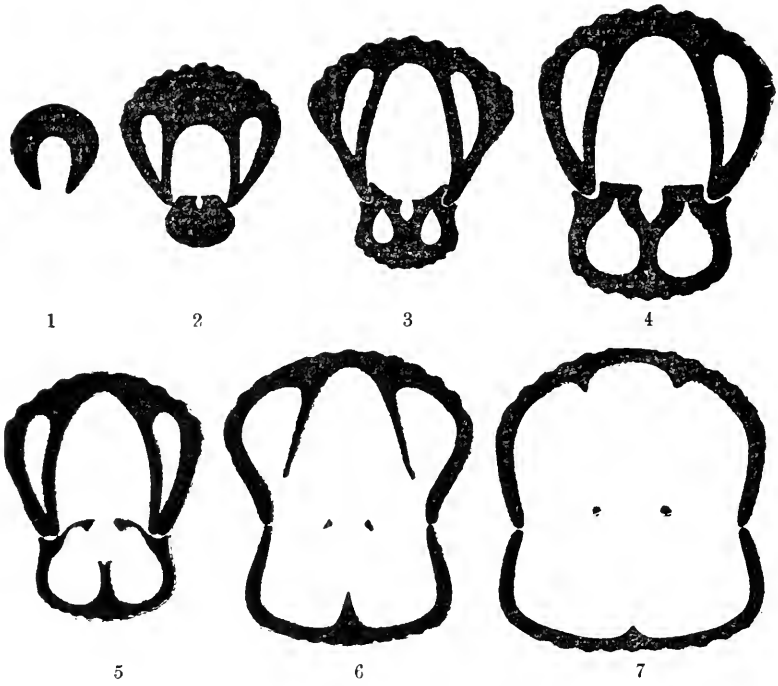
* Presented by title to The Acad. of Sci. of St. Louis, April 17, 1905.

† Trans. Am. Phil. Soc., vol. 15, p. 444.

PARAPHORHYNCHUS n. gen.

Shell rostrate, or rather large size, coarsely plicate with usually simple plications which extend nearly to the beak, with a deep sinus in the pedicle valve and an elevated fold in the brachial valve of the mature shell. Surface of both valves marked by very fine longitudinal striae which increase by bifurcation and intercalation. In the interior of the



Figures 1–7. A series of sections through the shell of *Paraphorhynchus elongatum*, showing the structure of the hinge-plate with its cruralium-like cavity, the medium septum and the crura of the brachial valve, and the dental lamellae of the pedicle valve.

pedicle valve there is a pair of vertical dental lamellae which support the teeth and extend forward into the cavity of the valve and between which there is a narrow muscular scar. In the brachial valve a strong median septum supports posteriorly a hinge-plate with a median cruralium-like cavity, anteriorly each lateral division of the hinge-plate is produced

into the cavity of the shell as a crural process, and the median septum also continues forward towards the front of the shell beyond the cruralium-like hinge-plate. Cardinal process wanting. Shell structure fibrous, not punctate.

The members of this genus differ exteriorly from *Pugnax* with which they have usually been placed, in the longitudinally striated shell surface, and in the more strongly plicated shell with the plications extending nearly to the beak. Internally the characters of the shell resemble *Camarotoechia* rather than *Pugnax*, the strong median septum of the brachial valve with its cruralium-like hinge-plate being absent in the typical forms of *Pugnax*.

PARAPHORHYNCHUS ELONGATUM, n. sp.

Pl. 1. f. 1-5.

Shell longer than wide, broadest in front of the middle, in the posterior region both valves are convex, the fold and sinus of the mature shell originating at or back of the middle of the shell, in the posterior half of the shell the lateral surfaces are flattened and non-plicate, the flattened area becoming concave as it approaches the beaks, the line of junction between the two valves being in the bottom of the concavity. The coarser surface markings consist of from ten to fourteen rounded radiating plications, twelve being the usual number, with a few concentric lines of growth which are often nearly or quite obsolete. In rare instances one of the radiating plications is seen to bifurcate in the anterior portion of the shell. The five median plications are usually depressed in the sinus of the pedicle valve with a corresponding number elevated in the fold of the brachial valve, the two lateral plications in both fold and sinus frequently becoming obsolete before reaching the anterior margin. The minute surface markings consist of fine radiating striae and still finer concentric striae. The radiating striae can be clearly seen with the naked eye, four or five of them occupying the space of one millimeter, they are nearly or quite obsolete upon the flattened lateral surfaces of the valves. The concentric striae are much finer and can only be seen with the aid of a

magnifying glass. Upon those specimens from which the shell substance has been removed, the impressions of the vascular sinuses are well developed. The internal structure of the shell is as has been described in the definition of the genus.

None of the type specimens of this species are perfectly preserved so that the dimensions given below are approximate rather than exact. The largest specimen has a width of 29 mm., an approximate length of 42 mm., and a thickness of 26 mm. A smaller specimen has a width of 24 mm., a length of 36 mm., and a thickness of 22 mm. The average rostral angle as determined from the eleven specimens examined which are complete enough for measurement, is 73.5°.

Locality. The cotypes of the species (Pal. Coll. Walker Museum No. 7800; 13 specimens), are from a dove-colored, Kinderhook limestone occurring on the South Fabius river, in the south-eastern corner of Knox County, Missouri.

PARAPHORHYNCHUS STRIATOCOSTATUM (M. & W.).

Pl. 1, f. 6-11.

1868. *Rhynchonella Missouriensis*, Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 450, pl. 14, figs. 7a–d.

1868. *Rhynchonella striatocostata*, Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 452.

1895. *Pugnax striato-costata*, Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, p. 204.

1895. *Pugnax missouriensis*, Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 33–34.

1897. *Pugnax striaticostata*, Schuchert, Synop. Am. Foss. Brach., p. 336 (in part).

1898. *Pugnax striaticostata*, Weller, Bibliog. Index N. A. Carb. Inv. p. 517–518, (in part).

1900. *Pugnax striaticostata*, Weller, Ann. Rep. Ia. Geol. Surv., vol. 10, p. 76.

1901. *Pugnax striaticostata*, Weller, Trans. St. Louis Acad. Sci., vol. 11, p. 154, pl. 13, figs. 14–16.

Shell about as long as wide but varying a little in either way; broadest at about the middle. The pedicle valve shal-

lower than the brachial, flattened on the umbo; the fold and sinus originating much nearer the beak than in *R. elongatum*, the lateral slopes of the shell concave towards the beaks. The coarser surface markings consist of from nine to eleven strong, rounded, simple plications, and a few more or less irregularly developed concentric lines of growth which are sometimes almost obsolete; of the radiating plications, three or four, rarely two only, are included in the sinus of the pedicle valve which becomes deep toward the front, the median portion of the valve being produced toward the brachial valve in a lingual extension. The minute surface markings consist of fine radiating striae which cover the surface of both valves, about four or five occupying the space of one millimeter. Fine concentric striae are also present but they can only be detected by the aid of a magnifying glass and are frequently quite obscure, never being so conspicuous as upon *P. elongatum*.

The dimensions of a very perfect specimen from Burlington, Iowa, are: length 22.5 mm., width 23 mm., thickness 15 mm. The dimensions of a Pike County, Illinois, specimen are: length 25.5 mm., width 26 mm., thickness 18 mm. The average rostral angle of five specimens is 98°.

This species may be easily distinguished from *P. elongatum* by its smaller size, its greater proportionate width, its shallower pedicle valve and its greater rostral angle.

Localities. Meek and Worthen's type of this species is recorded from Kinderhook, Pike County, Illinois. The species also occurs in beds 3 and 4 (Weller 1899), of the Kinderhook section at Burlington, Iowa. The specimen illustrated by Hall and Clarke as *Pugnax missouriensis* is said to have come from Pike County, Missouri, and Prof. R. R. Rowley, of Louisiana, Missouri, has informed the writer that he has collected the species in its typical form, from the Louisiana Limestone of that county. The specimens here illustrated are from Pike County, Illinois (Pal. Coll. Walker Museum, No. 6711), and are probably from Kinderhook, the type locality of the species; and from Burlington, Iowa (Pal. Coll. Walker Museum, No. 6658), bed No. 4 of the Kinderhook.

PARAPHORHYNCHUS TRANSVERSUM n. sp.

Pl 1, f. 12-15.

1895. *Pugnax missouriensis*, Hall and Clarke, Pal. N. Y., vol 8, pt. 2, pl. 62, figs. 44–45. (Not *Rhynchonella missouriensis* Shumard, 1855.)

1900. *Pugnax striaticostata* var.?, Weller, Ann. Rep. Ia. Geol. Surv., vol. 10, p. 71. (Not *Rhynchonella striatocostata* M. & W., 1868.)

1900. *Pugnax striaticostata* var.?, Weller, Trans. St. Louis Acad. Sci., vol. 10, p. 72, pl. 2, figs. 16–17.

Wider than long, the pedicle valve much less convex than the brachial, the fold and sinus originating on the umbo, nearly at the beak. In the number and form of its radiating plications and striations this species closely resembles *P. striatocostatum*, but its proportionate width is always greater than that species and it attains a larger size at maturity The dimensions of a nearly perfect specimen from Burlington, Iowa, are: length 24.5 mm., width 30 mm., thickness 21 mm. The average rostral angle of five specimens is 114.5°.

Localities. This species occurs in the yellow sandstone of the upper portion of bed No. 2 of the Kinderhook section at Burlington, Iowa, where it is a member of the Chonopectus fauna. It also occurs in the yellow Kinderhook sandstone at Kinderhook, Illinois, in a bed about 25 feet below the summit of the formation, and in the English River grit, at Maples' Mill, near Wellman, Washington County, Iowa.

EXPLANATION OF PLATE.

Paraphorhynchus elongatum n. sp., Figs. 1–2, pedicle and brachial views of one specimen. Figs. 3–4, similar views of another specimen. Fig. 5, lateral view of a third specimen. All from Knox County, Missouri.

Paraphorhynchus striatocostatum (M. & W.), Figs. 6–8, pedicle, brachial and anterior views of a specimen from Pike County, Illinois. Figs. 9–11, pedicle, brachial and lateral views of a specimen from bed No. 4, at Burlington, Iowa.

Paraphorhynchus transversum n. sp., Fig. 12, a pedicle valve from Kinderhook, Illinois. Figs. 13–15, pedicle, brachial and anterior views of a specimen from bed No. 2, at Burlington, Iowa.

Issued May 9, 1905.

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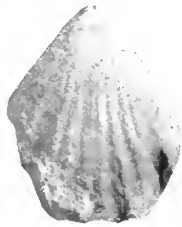

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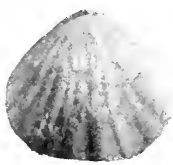

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PARAPHORHYNCHUS, A NEW GENUS OF KINDERHOOK BRACHIOPODA.

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Transactions of The Academy of Science of St. Louis.

VOL. XV. No. 5.

THE BACTERIOLOGICAL EXAMINATION OF RIVER WATER.

WALTER C. G. KIRCHNER.

Issued August 5, 1905.

AUG

THE BACTERIOLOGICAL EXAMINATION OF RIVER WATER.*

WALTER C. G. KIRCHNER, A.B., M.D.

It was while employed as assistant Bacteriologist in the Health Department of St. Louis, engaged in the examination of the water of the Mississippi, the Missouri and the Illinois rivers, and of the Chicago Drainage Canal, that opportunity was offered for making certain observations which form the basis for this paper. With few interruptions I was engaged in this bacteriological work for a period of about two years extending from September, 1899, to December, 1901.

The bacteriological investigation of these streams was undertaken under the supervision of Dr. Amand Ravold, formerly City Bacteriologist, and, besides myself, there were also engaged in the work Mr. George A. Johnson, Dr. C. A. Snodgras and Dr. Wm. H. Rush.

In dealing with this subject the object of the writer is not so much to present data which are absolutely new, but rather to show to those not familiar with the subject what is implied by a bacteriological water examination and to point out certain difficulties which are encountered not only in making bacteriological tests, but also in the interpretation of the results of such analyses. The public, as a rule, is very slow in giving proper consideration to a municipal water supply, and is mostly interested in the results or effects of the water on the community, while scientists, more particularly chemists, bacteriologists, and sanitarians who have to deal with these problems, are interested not only in the results, but also in the causes which contribute to make the water bad or wholesome. The public merely wishes to know if the water is good. The scientist, moreover, is expected to determine *why* the water is good or bad, and if bad, he is urged to recommend measures so that the proper remedy be applied. In certain cases the examination may be a very simple mat-

* Read before The Academy of Science, December 19, 1904.

ter, as, for example, in testing the water from wells, or estimating the efficiency of a filter; but when we are dealing with the waters of a river system, problems of the most complex character will often arise.

It must be borne in mind that in an investigation along bacteriological lines, we are dealing with living matter. That bacteria are present not only in water, but also in the air and soil, and in fact they are so widely distributed that we may consider them present wherever organic matter is found. Certain bacteria are pathogenic or disease producing, but the vast majority are harmless and take an active and most important part in the life history and development of the universe.

Without the activity of bacteria, plant life could not well exist, for it has been found that the nitrogen so essential to metabolism is in great part supplied through the agency of certain bacteria which are present in decaying matter. Sewage contains countless numbers of bacteria, which through their activity and the action of their enzymes, produce gradual but definite changes in the organic matter. These changes in the organic matter taking place by definite steps are what is ordinarily called "decay" or putrefaction, and when due to bacteria are designated by the term *bacteriolysis* in contradistinction to the term *hydrolysis* which is used to designate similar changes when due to the action of chemical agents. As a common illustration of such changes, the waste product, urea, may be taken. By the action of certain bacteria (M. ureae) a fermentative process takes place in which urea in the presence of water is converted into ammonium carbonate. The changes may be represented thus:

$$CO\begin{matrix}NH_3\\NH_3\end{matrix} + 2\ H_2O = (NH_4)_2CO_3.$$

In sewage and in soil, other bacteria being present, additional changes known as *nitrification* take place. In the successive changes a process of oxidation occurs in which, in the case of certain substances, ammonium compounds are formed, and these in turn are further converted to nitrites and to nitrates. In the form of nitrates plants are capable

of utilizing the nitrogen, and, in conjunction with other elements, of elaborating it into plant tissues which may serve as food for animals and for man. The bacteria, acting upon dead organic matter and upon the waste products of metabolism, convert the nitrogen compounds into a form which again becomes available for the growth of plant and animal life. It must be evident that the part which bacteria play in this cycle of changes is not only important but essential for life activity, and in the problem of sewage purification these phenomena must receive proper consideration.

A river-basin, representing the lowest level for the region through which it flows, is the natural receptacle for all waste products. The variety of the material which finds its way into a river is very great, and the circumstances and elements which unite to modify the condition of a river are so numerous, that it should not be surprising that often great difficulties are encountered, not only in obtaining definite results, but also in arriving at their proper interpretation. In order, therefore, to fully understand the subject of pollution of streams by sewage, it would be necessary to have at least a thorough knowledge of the scope and methods of a bacteriological examination.

Before any bacteriological work can be satisfactorily undertaken, it is essential that the laboratory equipment be adequate and that the assistants be competent and capable of attending to their respective duties. It is necessary that all persons connected either with the collecting, handling or examination of samples, and that all persons working in the laboratory be imbued with what might be called the "bacteriological idea." By this expression is meant a thorough knowledge and appreciation of the fundamental principles of bacteriology; for no trustworthy work can be done, unless all persons engaged in the undertaking understand the objects and methods of sterilization and appreciate the sources and means by which a sample of water or any portion of the work may be contaminated. Reliable results are obtainable only with unity of purpose, uniformity of methods, and interdependence of those engaged in the undertaking.

Collection of Sample. — The collection of satisfactory and average samples of water is an important part of the work and at times offers great difficulties. In taking the sample one should avoid the scum and debris, and it is better to collect the sample from one to three feet below the surface of the water. Wide mouth bottles with glass stoppers, having a capacity of 150 c.c. are most suitable for the purpose. Simplicity and reliability of collection, especially when this work is intrusted to persons who are not bacteriologists, is an important consideration, and in order to overcome some of the difficulties incident to the collection of samples of river water, I invented in 1899 an apparatus, as shown in Figure I., and which may be described as follows:—

The apparatus is made almost entirely of brass tubing and consists essentially of two upright supports which are held in place above and near the middle by means of two cross-pieces, and at the bottom by means of a plate or base, which supports the bottle. The two cross-pieces give attachment to a tube, which serves as a handle. Through the entire length of the handle passes a snugly-fitting brass rod, to the lower end of which is attached a spiral spring and a clamp, which is provided with a thumb-screw. When the bottle is in position the brass rod and the axis of the bottle are in the same line. The bottle is held firmly in position by means of an armed ring, which passes freely over the top and rests upon the body of the bottle, so that by pressing downward on the ring and securing it by means of the thumb-screw to the support, the bottle will be held firmly in position. There are also three pins on the plate at the base, which prevent the bottle from sliding. The handle is provided with a stirrup-like arrangement, which aids in holding the apparatus when it is lowered into the water. By fastening a cord to the rod and a wire or chain to the stirrup, the apparatus may be lowered to any desired depth. Fastened to the side of the apparatus is a glass tube, the bottom of which is sealed, but the top of which is provided with a stopper, to which a cord is attached. This tube contains the thermometer.

The bottle having been secured in position and the clamps

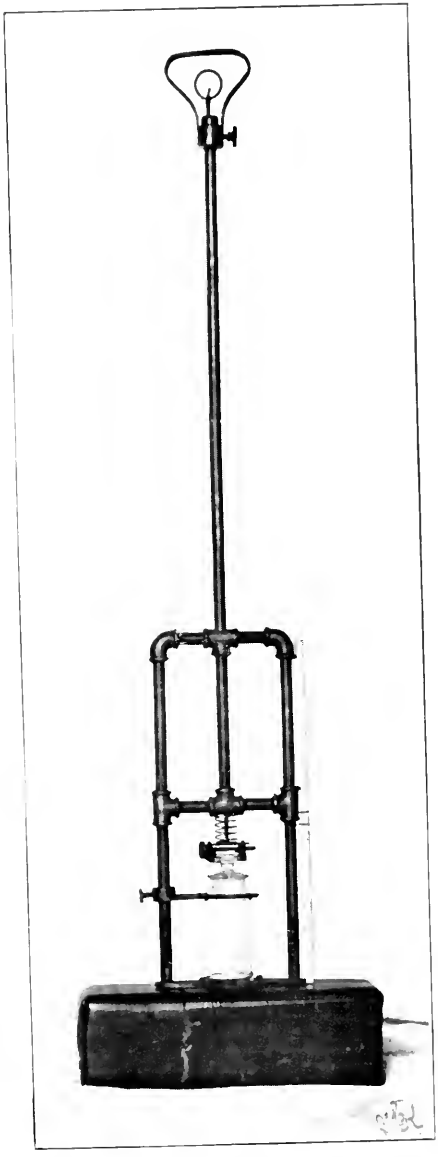

FIG. 1.

adjusted around the stopper, the apparatus may be lowered into the water. By pulling the rod the stopper will be raised and the water will enter the bottle. On releasing the hold on the rod, the spring returns the stopper into the neck of the bottle. The stopper of the tube which contains the thermometer having also been removed, the apparatus may be withdrawn from the water.

The apparatus has the advantage that it may be operated with one hand. It is firm and simple of construction, and, although subjected to rough usage, has given entire satisfaction. A similar but larger apparatus has been used for taking samples for chemical analysis.

The bottle for the collection of samples should have a well-fitting stopper, and the top having been wrapped with lead-foil and a cloth, the bottle should be sterilized. After collecting, the lead-foil and cloth should be replaced, and the bottle should be placed in a clean can and packed in ice. Each sample should be properly labeled, and should bear the date, location, temperature of air and of water, name of collector, and other special data.

Transportation of Samples. — The samples having been collected, they should be examined at once, or, if this is not possible, they should be transported to the laboratory with the greatest possible dispatch. It is essential that the samples be kept not only "cold," but their temperature while in transit should be kept at or near the freezing-point by packing them in ice. It is well-known that bacteria in samples of water generally multiply and reach enormous numbers under favorable conditions of growth, but in order to obtain definite information on this point, I made a number of tests which illustrate of how great importance the factors of time and temperature are in arriving at the actual conditions of the water.

Samples arriving at the laboratory were plated immediately for a quantitative determination and were then placed in that compartment of a household refrigerator where the ice is kept. The samples were replated on the next day after an interval of nineteen to twenty-four hours. Sixty-six tests were made in this manner, but for illustration it will be necessary only to give a portion of the results. (Table I.)

TABLE I.

SHOWING EFFECT OF ICE-BOX TEMPERATURE ON SAMPLES OF WATER.

Source of Sample.	First Plating.		No. of Colonies per c.c.	Second Plating.		No. of Colonies per c.c.	Approximate Ratio.
	Day.	Hour.		Day.	Hour.		
Drainage Canal, Lockport	1900 May 28	4:00 P. M.	832,000	1900 May 29	12:00 M	763,000	1: 0.9
Illinois R., Peoria	" "	" "	1,330,000	" "	" "	642,000	1: 0.5
Illinois R., Grafton	" "	" "	4,900	" "	" "	50,200	1:10.0
Mississippi R., Grafton	" "	" "	3,600	" "	" "	142,000	1:40.0
Mississippi R., Intake	" "	" "	9,800	" "	" "	155,600	1:16.0
Reservoir, Chain of Rocks	" "	" "	4,100	" "	" "	82,400	1:20.0
Mississippi R., E. Shore, Chain of Rocks	" "	" "	6,500	" "	" "	122,500	1:19.0
Mississippi R., W. Shore, Chain of Rocks	" "	" "	11,900	" "	" "	84,000	1: 7.0

The tests gave results that were extremely erratic. While in the vast majority of cases there was a great increase in the number of bacteria, in certain instances the increase was either slight or the number of organisms had actually diminished. This was particularly true in those samples that originally contained large numbers of bacteria.

Experiments were also made to determine the effect of transportation under conditions that were most satisfactory. In order to carry out these tests the samples were plated immediately at the place where they were collected, and were then packed and kept on ice until they were replated on the following day. The comparative results are shown in the following table: —

TABLE II.

DATA SHOWING THE EFFECT OF SHIPMENT ON SAMPLES OF WATER COLLECTED FOR BACTERIOLOGICAL ANALYSIS.

Source of Sample.	Time Collected and Plated.	Number of Colonies per c.c.	Time Plated on following Day.	Number of Colonies per c.c.	Ratio.
Series A.					
Illinois R., 3 miles above Grafton	2:20 P. M.	1,200	4:30 P. M.	1,800	1: 1.50
Mississippi R., 2 miles above Grafton	2:55 "	4,000	4:30 "	5,000	1: 1.25
Mississippi R., below Grafton	4:00 "	3,800	4:30 "	3,400	1: 0.90
Mississippi R., Clifton Terrace	4:15 "	4,000	4:30 "	3,600	1: 0 90
Mississippi R., 2 miles below Alton	6:30 "	1,500	4:30 "	2,100	1: 1 40
Mississippi R., Hartford	7:00 "	1,300	4:30 "	1,800	1: 1.38
Mississippi R., Madison Landing (West Shore)	7:30 "	7,200	4:30 "	3,700	1: 0.51
Mississippi R., Madison Landing (East Shore)	7:45 "	4,700	4:30 "	2,700	1: 0.57
Mouth of Alton Sewer	5:30 "	790,000	4:30 "	89,000,000	1:112.00
Series B.					
Mississippi R., 2 miles above Grafton	1:30 "	1,050	10:00 A. M.	2,100	1: 2.00
Illinois R., 5 miles above Grafton	3:00 "	800	10:00 "	1,950	1: 2.44
Mississippi R., Elsah	4:00 "	800	10:00 "	635	1: 0.79
Series C.					
Mississippi R., 2 miles above Grafton (3 feet deep)	1:30 "	1,800	4:00 P. M.	900	1: 0.50
Illinois R., 3 miles above Grafton (3 feet deep)	2:30 "	800	4:00 "	350	1: 0.44
Illinois R., 3 miles above Grafton (12 feet deep)	2:30 "	1,400	4:00 "	900	1: 0 64
Mississippi R., Elsah (3 feet deep)	3:15 "	1,200	4:00 "	1,500	1: 1.25
Mississippi R , Elsah (18 feet deep)	3:15 "	1,200	4:00 "	1,300	1: 1.08
Mississippi R., Clifton Terrace (3 feet deep)	4:30 "	1,700	4:00 "	950	1: 0.56

TABLE II. — *Continued.*

DATA SHOWING THE EFFECT OF SHIPMENT ON SAMPLES OF WATER COLLECTED FOR BACTERIOLOGICAL ANALYSIS.

Source of Sample.	Time Collected and Plated.	Number of Colonies per c.c.	Time Plated on following Day.	Number of Colonies per c.c.	Ratio.
Mississippi R., Clifton Terrace (8 feet deep)	4:30 P. M.	2,100	4:00 P. M	2,600	1:1.23
Mississippi R., Hartford (3 feet deep)	5:30 "	2,300	4:00 "	1,100	1:0.48
Mississippi R., Hartford (12 feet deep)	5:30 "	1,300	4:00 "	1,300	1:1.00
Missouri R. (North Mouth)	6:00 "	8,100	4:00 "	3,800	1:0.47
Mississippi R. (above Intake)	8:45 "	2,600	4:00 "	2,400	1:0.92
Series D.					
Mississippi R., 2 miles above Grafton	2:00 "	2,150	4:00 "	2,100	1:0.98
Illinois R., 4 miles above Grafton	3:00 "	840	4:00 "	620	1:0.74
Mississippi R., Elsah	3:20 "	2,450	4:00 "	5,180	1:2.11
Mississippi R, Clifton Terrace	4:30 "	1,530	4:00 "	960	1:0.63
Mississippi R. below Alton	5:20 "	2,190	4:00 "	2,020	1:0.93
Missouri R. (North Mouth)	5:40 "	30 500	4:00 "	28,600	1:0.94
Mississippi R., Madison Landing	6:00 "	2,500	4:00 "	.....	.....

Series A. This represents the results of a steamboat trip which was made Aug. 2, 1900. The samples were plated immediately after collection. They were surrounded by ice and transported to the laboratory where they were placed in the ice box next to the ice. They were replated on the next day.

Series B. Steamboat trip Aug. 16, 1900. Samples plated on the boat and again on the following day. The samples were kept on ice until plated the second time.

Series C. Steamboat trip Aug 30, 1900. The samples were plated on the boat immediately after collection and again on the next day. Care was taken to keep samples near the freezing-point by packing in ice.

It is to be noticed in this series that at certain places two separate samples were taken, one deep and the other near the surface of the water. In all of these samples *B. coli communis* was found.

Series D. Steamboat trip September 20, 1900. Samples were plated on the boat, were packed and kept in ice until replated on the next day.

From this table it will be noticed that the numbers of bacteria at the second plating had in most cases not increased and in fact there was in certain instances a decided numerical decrease.

It was also desirable to know what effect the immediate chilling of a sample would have on the number of bacteria. A few of the results of an effort to determine this are collected in the following table: —

TABLE III.

SHOWING THE INFLUENCE OF COLD ON SAMPLES TAKEN FROM THE TAP.

1st Plating.		2d Plating.		Ratio.	3d Plating.		Ratio.	Remarks.
Date. 1900.	Bacteria per 1 cc.	Hours after 1st Plating.	Bacteria per 1 cc.		Hours after 1st Plating.	Bacteria per 1 cc.		
July 19	54	4.0	54	1:1.0	24.0	364	1:6.70	Between 1st and 2d plating, samples next to the ice. Between 2d and 3d plating, sample near ice.
" 23	960	3.5	396	1:0.40	26.5	640	1:0 70	Samples near ice.
" 25	740	4.0	760	1:1.02	28.0	1275	1:1.50	" " "
" 26	685	4.0	760	1:1.11	28.0	775	1:1.13	" " "
Aug. 20	685	3.5	275	1:0 40	24.0	1285	1:1.88	Samples in melting ice.
" 22	830	3.5	715	1:0.86	24.0	690	1:0.83	" " "
" 23	1650	3.5	935	1:0 56	24.0	1135	1:0.68	" " "
" 24	1620	3.5	1720	1:1.06	25.0	1140	1:0.70	" " "
" 27	145	4 5	111	1:0.76	24.0	111	1:0.76	" " "
" 28	94	2.5	117	1:1.24	28.5	106	1:1.12	" " "

It must be clear from the foregoing illustration that unless the samples are collected and transported with the greatest care, the results obtained may be far from the truth. It is usually not possible nor convenient to test samples at the place of collection. I have on a few occasions plated samples on the field and the same samples again at the laboratory under favorable conditions of transportation, and the results on comparison have always been within the limits of error or variation. Except under favorable conditions, it is better, in routine work, to have all samples sent to the laboratory when it is possible to have them properly shipped in ice. While the experiments on the effects of transportation were carried out independently, the results and conclusions are, for the most part, in accord with those obtained by other observers (Jordan and Irons, 1899; Whipple, 1901). Samples of water that are chilled will often show a decided decrease in numbers, while the same quality of water collected during cold weather and subjected to similar treatment will often show an increase in the number of bacteria. It is also true that waters from different sources do not behave in the same way regarding conditions of temperature.

Reception of Sample. — The sample upon its reception should receive immediate attention and should not be handled except by the person who is to make the examination. Careful notes should also be made as to the condition in which the sample was received.

Examination of Sample. — Aside from observations on the physical properties of the water, — odor, color, turbidity, sediment, temperature, etc., the bacteriological examination of water divides itself into: (a) quantitative determinations, (b) qualitative determinations, and (c) special examination. For our purpose, it will be best to take up each of these divisions separately.

Quantitative Determinations. — By a quantitative determination we mean the estimation of the number of bacteria in a given quantity of water, usually expressed by the number of bacteria per cubic centimeter. At the time that the in-

vestigation was begun, the methods of bacteriological examination of water, considered from the standpoint of practical utility were very unsatisfactory. The methods have since been improved and through the efforts of the American Public Health Association, a greater uniformity of methods is being established. It will therefore not be necessary to consider in detail the methods of quantitative analysis, since those have been described in the more recent works on bacteriological water analysis.

In brief, the method consists in taking a definite quantity of the water to be examined, placing it in a Petri dish to which some nutrient medium is added and when thoroughly mixed, the inoculated medium is incubated for a certain period to permit the bacteria to develop into colonies. The colonies of bacteria are then counted and the estimation of the number of bacteria can be made.

In our work we utilized the tops and bottoms of the Petri dishes by covering them with glass squares, and we were thus able to double the number of dishes for counting bacteria. The plates with the square covers are deposited and held in place by means of a special receptable. For the purpose of counting, Jeffer's plate, which is ruled in concentric circles and subdivided, has given the greatest satisfaction.

In determining the number of bacteria the character and quality of the medium is of the utmost importance. In my own work I have found gelatin the most satisfactory and by its use, we can often judge both of the nature of the bacteria and of the character of the water. I have compared the various batches of media which were made up under nearly uniform methods, to ascertain their relationship and uniformity and to be better able to judge of the results obtained in the work. In Table IV are given certain data on the preparation of nutrient gelatin, and in Table V are shown a few of the comparative tests which are summarized in Table VI. The results of Table VI are shown diagrammatically in profile.

TABLE IV

DATA ON THE PREPARATION OF NUTRIENT GELATIN.

Medium Lot. No.	Date of preparation. 1900.	Time heated over water-bath.	Time boiled over free flame.	Reaction when ingredients were dissolved.	Final Reaction.	Amount of filtrate in c. c.
1	May 12	10 min.	8 min.	+ 4.7%	+ 1.5%	4500
2	" 22	15 "	10 "	+ 5.7%	"	5450
3	" 30	15 "	10 "	+ 4.8%	"	3600
4	June 1	10 "	8 "	+ 4.9%	"	5650
5	" 8	10 "	5 "	+ 5.6%	"	3250
6	" 14	.....	8 "	+ 4.7%	"	5400
7	" 25	25 "	15 "	+ 3.8%	"	4600
8	July 1	15 "	10 "	+ 4.0%	"	5200
9	" 13	15 "	10 "	+ 5.3%	"	5500
10	" 25	20 "	15 "	+ 4.4%	"	5000
11	" 27	.....	5 "	+ 5.2%	"	5650
12	Aug. 10	30 "	5 "	+ 4.7%	"	5500
13	" 28	30 "	5 "	+ 4.7%	"	5300
14	Sept. 8	30 "	5 "	+ 4.7%	"	5250
15	" 18	30 "	5 "	+ 4.5%	"	5350
16	" 27	45 "	10 "	+ 4.7%	"	4500
17	Oct. 17	30 "	6 "	+ 4.0%	"	5100
				Average + 4.7%		

NOTE: In all cases 12 per cent gelatin, 1 per cent peptone, and 0.5 per cent salt were added to the meat infusion. In lots 7, 8, 10, 16 and 18 eggs were used to clarify the medium. In lots 8 and 9 the broth was boiled for 45 minutes.

TABLE V.

TESTS SHOWING COMPARATIVE VALUE OF MEDIA MADE UNDER NEARLY UNIFORM METHODS OF PREPARATION.

Location.	Plated.		Dilution.	*a* Bacteria per 1 c.c.	*b* Bacteria per 1 c.c.	$p = \frac{b-a}{a}$.
	Day.	Hour.				
				Old.	*Lot 1.*	
Drainage Canal, Lockport	May 15	4 P. M.	1-1000	52,000	128,000	+145%
Illinois R., Peoria	"	"	1-100	99,300	112,000	+13%
Illinois R., Grafton	"	"	1-100	5,400	7,600	+41%
Mississippi R., Grafton	"	"	1-100	12,000	13,000	+8%
Mississippi R., Alton	"	"	1-100	15,000	11,100	−6%
				Lot 1.	*Lot 2.*	Average +36%
Illinois R , Peoria	May 23	4 P. M.	1-1000	2,185,000	2,115,000	−0.4%
Drainage Canal, Lockport	"	"	1-1000	2,730,000	2,725,000	−0.2%
Drainage Canal, Joliet	"	"	1-1000	3,120,000	2,810,000	−10%
Illinois R., Grafton	"	"	1-100	4,500	7,200	+60%
Mississippi R., Grafton	"	"	1-100	8,500	11,500	+35%
Mississippi R., Alton	"	"	1-100	11,900	18,200	+53%
Mississippi R., Hartford	"	"	1-100	10,200	11,900	+16%
Missouri R., Bellefontaine	"	"	1-1000	32,000	38,000	+19%
				Lot 2.	*Lot 3.*	Average +20%
Illinois R., Peoria	May 30	7 P. M.	1-1000	239,000	254,000	+6%
Drainage Canal, Lockport	"	"	1-1000	58,000	15,000	−74%
Drainage Canal, Joliet	"	"	1-1000	67,000	20,000	−70%
Illinois R., Grafton	"	"	1-100	2,600	2,500	−4%
Mississippi R., Grafton	"	"	1-100	5,800	2,800	−60%

TABLE V. — *Continued.*

TESTS SHOWING COMPARATIVE VALUE OF MEDIA MADE UNDER NEARLY UNIFORM METHODS OF PREPARATION.

Location.	Plated.		Dilution.	a Bacteria per 1 c.c.	b Bacteria per 1 c.c.	$p = \frac{b-a}{a}$.
	Day.	Hour.				
				Lot 2.	*Lot 3.*	
Mississippi R., Alton	May 30	7 P. M.	1-100	7,400	8,200	+10%
Mississippi R., Hartford	"	"	1-100	6,200	5,000	−19%
Missouri R., Bellefontaine	"	"	1-1000	66,500	50,000	−25%
						Average −27%

Remarks: a = Number obtained on old medium.
b = Number obtained on new medium.
p = Percentage increase or decrease and expressed by the
Formula: $p = \frac{b-a}{a}$.

TABLE VI.

SUMMARY OF RESULTS OF COMPARATIVE TESTS.

Medium Lots Compared.	Average per cent. increase or decrease of New Medium over Older.
Old and 1	+36%
1 " 2	−20%
2 " 3	−27%
3 " 4	+78%
4 " 5	+7%
5 " 6	−4.5%
6 " 7	+101%
7 " 8	−23%
8 " 9	+10%
9 " 11	−7%
11 " 12	−5%
12 " 13	−17%

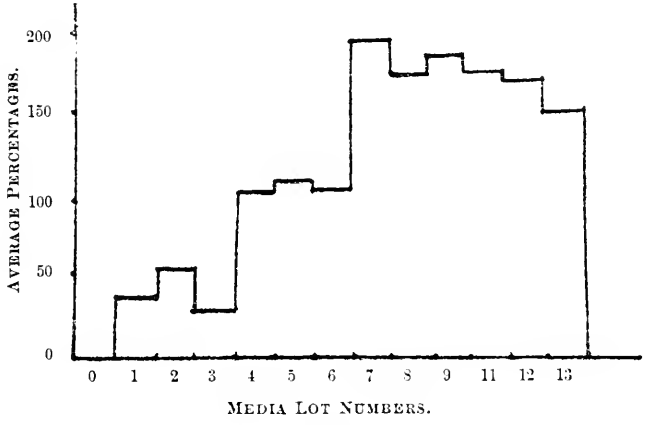

FIG. 2.

We see from these observations how difficult it is even when great care is taken in using uniform methods to get results that are strictly comparable. Certain bacteria are so delicate in structure and so susceptible to conditions of environment that the composition and treatment of media is a most important consideration. The constituents used in the preparation of media which may vary greatly in quality from time to time, the reaction of the medium, and even prolonged and repeated sterilization are influences which contribute to variations in the results and often lead to distinct cultural characteristics.

In the examination of water from different sources, it is important to know which medium reaction is best adapted or will give the highest efficiency in bacterial numbers. It is known that certain bacteria grow best on media of special reaction, and in order to establish which reaction of media was best suited for our work, special tests and comparisons were made, and a few of the results are collected in Table VII. In Table VIII will be found a summary of the results on media made under uniform conditions, each of the five lots of medium having a special reaction.

TABLE VII.

TABLE SHOWING THE EFFECT OF DIFFERENT REACTIONS OF MEDIA ON THE DEVELOPMENT OF BACTERIA.

Source of Sample.	Time Plated. 1900.	Average Number of Colonies per c.c.					Reaction giving best growth.
		Reaction 0.0	Reaction +0.5	Reaction +1.0	Reaction +1.5	Reaction +2.0	
Illinois R., Peoria	June 12	252,000	280,000	312,000	358,000	412,000	+2.0
Drainage Canal, Lockport	June 12	751,000	954,000	1,046,000	2,520,000	1,550,000	+1.5
Mississippi R., Alton	June 13	12,400	13,600	20,900	23,400	15,900	+1.5
Mississippi R., Hartford	June 13	7,800	7,900	9,700	10,200	11,000	+2.0
Missouri R., Bellefontaine	June 13	25,500	38,000	35,000	47,000	37,500	+1.5
Mississippi R., Intake	June 18	16,000	19,100	20,900	36,200	24,900	+1.5
Mississippi R., Chain of Rocks	June 18	19,000	21,000	31,100	48,500	36,400	+1.5
Des Plaines R., Joliet	June 20	37,500	39,000	59,500	83,500	72,000	+1.5
Mississippi R., Grafton	June 25	2,900	2,000	3,200	4,700	4,400	+1.5
Illinois R., Grafton	July 2	2,700	3,600	3,100	5,100	6,500	+2.0

TABLE VIII.

SUMMARY OF RESULTS ON MEDIA OF DIFFERENT REACTIONS.

Source of Sample.	Number of Tests Showing Optimum Growth on Media of Reaction:					Optimum Medium Reaction.
	0 0	+0.5	+1.0	+1.5	+2.0	
Drainage Canal, Lockport	....	....	....	3	2	+1.5
Des Plaines R., Joliet	....	1	....	2	1	+1.5
Illinois R., Peoria	....	....	....	1	4	+2.0
Illinois R., Grafton	1	....	....	2	4	+2.0
Mississippi R., Grafton	....	....	1	3	3	+1.5
Mississippi R., Alton	1	....	1	5	....	+1.5
Mississippi R., Hartford	....	....	....	4	1	+1.5
Missouri R., Bellefontaine	1	1	1	4	....	+1.5
Mississippi R., Intake	1	....	....	4	1	+1.5
Reservoir, Chn. of Rocks	....	.. .	....	2	1	+1.5
Mississippi R., east shore, Chain of Rocks	1	1	1	2	....	+1.5
Mississippi R. west shore, Chain of Rocks	....	....	1	2	....	+1.5
Tap, Laboratory, St. Louis	....	....	1	2	....	+1.5
Total Number of Tests	5	4	5	35	20	+1.5
Per Cent	7%	6%	7%	51%	29%	51%

It will be seen from Table VIII that media with reaction + 1.5 were best suited for the examination of water bacteria and it was the reaction of medium which was adopted throughout the work.

The chief objections to the use of gelatin in quantitative work lie in the fact that it melts at body temperature, and that it is liquefied by certain bacteria. However, it is just this latter property which makes it useful in judging of the quality of water. In my own experience, I soon learned to distinguish the water collected from the various sources by the character of growth on the gelatin plate. In order to determine the relative proportion of liquefying bacteria developing at the time when the plate was usually counted, I made a number of estimations for each of the different sources from which the water was collected. In each case 23–25 comparative counts were made, but for the purposes of illustration an example from each group may be sufficient. (Table IX.) Adjoining the table is a summary showing the average of results (23 tests) from each of the different waters.

TABLE IX.

SHOWING RELATIVE PROPORTION OF LIQUEFYING COLONIES.

Source of Sample.	Number of Colonies per 1 c.c.			Av. per cent. of Liquefying Colonies.
	Total.	Liquefying Col.		
Drainage Canal, Lockport	209,000	2,500	1.0%	1.5%
Des Plaines R., Joliet	218,000	4,000	2.0%	2.5%
Illinois R., Peoria	47,000	500	1.0%	0.5%
Illinois R., Grafton	4,900	150	3.0%	4.0%
Mississippi R., Grafton	11,300	540	4.0%	4.0%
Mississippi R., Alton	1,500	190	10.0%	10.0%
Mississippi R., Hartford	2,600	200	8.0%	9.0%
Missouri R , Bellefontaine	9,100	650	7.0%	7.0%
Mississippi R., Chn. of Rocks, Intake	7,300	550	8.0%	7.0%
Mississippi R., Chn. of Rocks, East Shore.	2,100	120	6.0%	6.0%
Mississippi R., Chn. of Rocks, West Shore.	10,100	500	5.0%	5.0%
Reservoir, Chain of Rocks	3,600	180	5.0%	5.0%
Tap, City Laboratory	1,100	95	9.0%	11.0%

The results as shown by the tables are relative and not absolute: the estimation was made on the third day of incu-

bation, the reaction of the medium being + 1.5%, and 12% gelatin being used in each case. For some reason in this series, the samples from Lockport, Joliet and Peoria showed few liquefying bacteria on the third day of incubation, while those from Alton and lower down along the stream showed not only more liquefiers, but the liquefaction of the gelatin had usually progressed to a considerable extent. At a certain period of the work I was stationed at Joliet, Ill., and samples from that district could be plated soon after collection. In these cases, I found a large percentage of liquefying colonies so that the low averages as shown in the table may be explained by the condition of transportation of the sample.

The quantitative estimation as shown by plate cultures should always be considered as relative and not as giving the absolute number of bacteria, for it has been found that various media used for plating give widely different results. The nature of the nutrient media, the conditions of growth, the presence or absence of air, moisture, etc., are all important factors modifying the actual bacterial number. To demonstrate what effect the absence of air would have on the number of bacteria, plates were prepared in the regular way and similar sets of plates were grown under anaerobic conditions with the following results: —

TABLE X.

Source of Sample.	Date.	Bacteria per c.c. Conditions of Growth.		Per Cent.
		Aerobic.	Anaerobic	
Des Plaines R., Lockport.....	Oct. 21, 1901.	1,200	650	54%
Bear Trap Dam, "	"	93,000	50,100	54%
Des Plaines R., "	Oct. 31, 1901.	1,900	900	49%
Bear Trap Dam, "	"	332,000	175,000	53%

With the removal of oxygen but half the number of bacteria developed, and it is important to consider this fact in connection with sewage polluted water. The quantitative examinations, while not giving absolute results, are often of value when the numbers run very high as an indication

of sewage pollution, and we may assume that the possibility of the presence of disease germs is greater. The numerical estimation is also useful in determining the mixture, dilution and current of a stream as influenced by sewage or tributaries.

The Isolation of Pathogenic Bacteria. — In the examination of water, our chief interest centers in the discovery and isolation of those organisms which cause disease in man. We know that typhoid fever and cholera are often transmitted to man through the agency of drinking-water, and any tests that help in the identification of the bacteria which produce these diseases or which will lead us to suspect their presence are worthy of consideration. Since, in this country, typhoid fever is the more prevalent of the water-born diseases, it has received most attention. We know furthermore that sewage often contains disease-producing bacteria, and the study of sewage bacteria, and especially the isolation of *B. coli communis*, has been considered of great importance.

The intestinal tract of man and animals has been regarded by some as the normal habitat for *B. coli communis*, and its presence in water has been taken as evidence of sewage pollution. While this latter assertion is true in a measure, we should hesitate to make a positive statement regarding sewage pollution until we have proved by quantitative tests that *B. coli communis* is present in large numbers. We must, however, first devise means for the isolation of this organism.

In the routine examination of water where many samples are to be analyzed, it must be evident that the detailed methods of isolation and identification are too cumbersome to be of practical value, and we are compelled to resort to short methods which are considered "presumptive tests." Such tests for the identification of *B. coli communis* were used in our laboratory, and, inasmuch as our method gave excellent results, I will give it in outline.

PRESUMPTIVE TESTS FOR B. COLI COMMUNIS.

(1) Inoculate broth tubes to which 4 drops of Parietti solution have been added with 1 c.c. of sample of water and incubate at 37° C. for two days.

(2) Make plate cultures from these tubes on glucose-litmus agar (Wurtz) and incubate at 37° C. for two days.

(3) Transfer to slant agar tubes two characteristic colonies and incubate at 37° C. for one day.

(4) Using these pure cultures, make glucose-gelatin shake cultures and set the tubes aside for ten days at 20° C.

(5) If no liquefaction takes place and no gas is produced in these tubes, using pure culture on agar, make inoculations into the following media:—

(a) Milk, to test coagulation.

(b) Dunham's solution, to test for indol.

(c) Nitrate solution, to test for reduction to nitrites. These cultures are incubated for five days at 37° C. or are set aside for ten days at 20° C. and are then observed.

(6) A pure culture in broth of two days' growth is examined for morphological characteristics.

The colon bacillus is very widely distributed, and we have been able to find it in all the waters collected from the various sources. In river water from certain sources it was almost constantly present in 1 c.c. of the sample. Thorough familiarity with methods of technique, and with the cultural characteristics, contribute much to the success in the identification of this organism.

No methods have as yet been devised for the successful isolation and identification of the typhoid bacillus. The methods used in the investigation of water furnish results which are available for the detection of sewage contamination, and by inference we conclude that there is a great possibility of the presence of disease germs. Recognizing the difficulties of examination and of proving the presence of pathogenic organisms, Victor C. Vaughan (1904) has resorted to biologic or animal tests as a means of obtaining information on the toxicogenic germs found in drinking-water. While not being able to identify the typhoid bacillus, he has, however, isolated an organism of the *B. venenosus* group which was frequently found in waters of a suspicious character, and which was fatal to guinea pigs. It seems to me that these biological or animal tests are of great value, and that a further study

along these lines will lead to more satisfactory and better methods of examination.

The ultimate object of an examination concerns itself not only with the detection of sewage, but also with the tracing of sewage, so that the source of contamination may be ascertained and the responsibility fixed. For the purpose of tracing contamination to its source, and as a means of showing the transmission of bacteria along water channels, resort may be had to *B. prodigiosus* which is non-pathogenic and which has cultural characteristics that make it easy of detection. This organism was used in our tests, and the following experiments were made.

A barrel of a pure broth culture of *B. prodigiosus* was prepared and the contents of the barrel (40 gal.) was emptied into the Mississippi river at a point a short distance below Grafton, Ill. Three weeks later this experiment was repeated in a similar manner at the same point in the river. This organism, *B. prodigiosus*, by tests carefully guarded by control methods, was recovered and identified on four separate occasions, and the data bearing on these experiments may be seen in the following table.

TABLE XI.

Dates of Introduction.	Dates of Collection of Samples.	Dates of Discovery on Plates.	Places of Collection.	Approximate Distance of Travel.
Aug. 30, 1900.	Sept. 3	Sept. 6	Alton.	12 miles.
Sept. 20, 1900.	Sept. 23	Sept. 26	Chain of Rocks, East Shore.	25 miles.
	Oct. 15	Oct. 18	Tap, Laboratory.	35 miles.
	Oct. 24	Oct. 27	Chain of Rocks, East Shore.	25 miles.

Based upon these experiments, and especially as previous to these tests (although over 3,000 samples of river-water had been examined), *B. prodigiosus* had not been encountered in water taken from the river, we are led to the conclusion that bacteria introduced into the current of the river at a place a short distance below Grafton may find their way into the water-supply of St. Louis.

In experiments made by Dr. Horrocks (J. San. Inst., 1899),

it was shown that in sterilized strong or dilute sewage *B. typhosus* was found alive after 60 days, but that in unsterilized sewage there was no evidence that this organism lived longer than 14 days. Dr. Ravold and others have also shown experimentally that *B. typhosus* may live for weeks in river-water, and that the longevity of *B. prodigiosus* under similar conditions is much the same. We see from this, that if it is possible for *B. prodigiosus* to be carried for many miles by means of a stream and to be detected in a water-supply, it is probable that *B. typhosus* under the same conditions would also be conveyed over considerable distances, and that a water-supply might then easily become contaminated. However, in arriving at positive conclusions in regard to the presence and the effect of disease germs in drinking-water, there are many factors to be considered, and, under the given and natural conditions, it is of the greatest importance to have definite information on the longevity of disease organisms occurring in water and in sewage.

It would be interesting in this connection to note the diminution in the number of bacteria in a running body of water heavily charged with sewage. In 1901, during a period of two months, I had excellent opportunity of making observations of the character of the water of the Drainage Canal at and near Joliet, Ill., and for the purpose of obtaining more reliable information, samples were also taken from the tributary streams. A glance at the diagram (Fig. 3) will give an idea of the conditions.

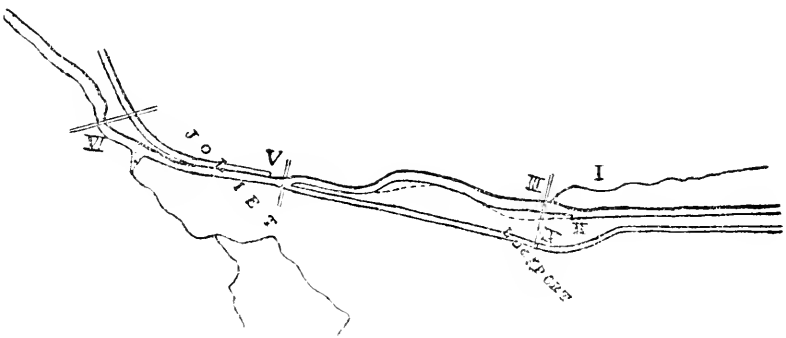

FIG. 3.

The water of the Drainage Canal after discharging itself over the bear trap dam, II, flows over the modified bed of the Des Plaines river. Near Ruby St. bridge at Joliet, V, the Illinois and Michigan canal and the Des Plaines river unite, but the old canal is continued on the opposite side of the stream, where it is controlled by locks. At I, the Des Plaines river, except during the rainy season, is merely a creek, and it seems more reasonable to consider the water below bear trap dam as a continuation of the Drainage Canal, although it follows the old bed of the Des Plaines river. The bear trap dam controls the flow of the canal which is about 250,000 cubic feet per minute, and the canal itself receives a large portion of the sewage of Chicago. Since a certain part of the sewage of Joliet finds its way into Hickory creek, samples were taken at VI to determine, if possible, its effect on the water of the canal. In most cases daily observations were made, but in the following table the results have been condensed by giving only averages for each of three consecutive days.

TABLE XII.

Date. 1901.	Number of Colonies Per c.c.					
	I.	II.	III.	IV.	V.	VI.
	Des Plaines River.	Bear Trap Dam, Lockport.	Drainage Canal at 9th Street Bridge, Lockport.	Illinois and Michigan Canal at 9th Street Bridge, Lockport.	Drainage Canal below Ruby St., Joliet.	Drainage Canal at Brandon Bridge below Joliet.
September 26-28	.....	850,000	.....	36,000	470,000	380,000
Sept. 29-Oct. 1..	.....	1,500,000	.....	500,000	500,000	250,000
Oct. 2-4.....	.....	160,000	84,000	61,000	140,000	130,000
Oct. 5-7.....	2,500	700,000	590,000	750,000	400,000	1,200,000
Oct. 8-10.....	2,400	88,000	48,000	600,000	54,000	39,000
Oct. 11-13.....	3,900	45,000	850,000	750,000	42,000	63,000
Oct. 14-16... ..	4,500	1,200,000	70,000	2,300,000	100,000	84,000
Oct. 17-19.....	54,000	1,000,000	350,000	750,000	83,000	53,000
Oct. 20-22	5,900	84,000	52,000	400,000	130,000	48,500
Oct. 23-25.....	2,500	650,000	350,000	600,000	100,000	130,000
Oct. 26-28.....	1,600	550,000	400,000	750,000	650,000	270,000
Oct. 29-31.....	1,900	220,000	300,000	1,600,000	300,000	380,000
Nov. 1-3.....	4,400	360,000	650,000	.....	390,000	320,000
Nov. 4-5.....	3,700	290,000	180,000	.....	130,000	190,000
Nov. 6-7.....	.....	.....	.....	.....	.....	.....
Nov. 8-10.....	2,900	750,000	600,000	.....	230,000	260,000
Nov. 17-19.....	4,800	3,000,000	4,400,000	.....	1,200,000	1,200,000
Nov. 20-22.....	10,000	3,900,000	3,000,000	.....	3,100,000	3,100,000
Nov. 23-25.....	4,200	5,000,000	6,000,000	.....	3,300,000	3,000,000
General Average	3,900	1,100,000	1,100,000	750,000	600,000	600,000
Number of Determinations.	44	53	47	36	53	53

Results show averages of daily estimations, and are recorded as recommended by the committee of the American Public Health Association.

From the table a number of interesting deductions can be made, and it is interesting to note that during the passage from the bear trap dam, II, to a point just below Ruby St. bridge, V, a distance of 23,200 feet, about 45 per cent. of the bacteria disappear. The distance between the points of collection V and VI is 14,800 feet, and the general average for these two places shows that there was no material change in the number of bacteria.

The fall in the Drainage Canal (Des Plaines R.) from Lockport to Joliet is about 30 feet, and the time required to cover the distance is about two hours and a half. The water flows rather swiftly over a rocky channel, and is in most places but a few feet deep. After flowing over the dam and spreading out over an extended area as a swift and shallow stream, the water is thoroughly churned and agitated, and these conditions afford excellent opportunity for aëration.

Sedimentation and dilution are often prime factors in the bacterial purification of streams, but these conditions do not maintain in this instance. Whether the decrease in the number of bacteria is due to aëration and agitation, to the exhaustion of the food supply, or to the toxins or poisonous products of the bacteria themselves, furnishes an interesting but difficult problem for solution. It would be interesting also to know if water having few bacteria, under the same conditions as above would show a similar decrease in the number of bacteria.

Have we an index of pollution of streams? A number of standards have been set up as tests for the pollution of streams, but none have at all times been reliable. For a time, the finding of *B. coli communis* was regarded as an index of sewage pollution, but the colon bacillus is very widely distributed, and since it has been found in fish, the mere presence of this organism in water may be of doubtful value. However, quantitative tests for the presence of *B. coli communis* would give us more satisfactory results. Experience has shown, that the most reliable index of the quality of drinking-water was to be found in carefully prepared health statistics of the community, and we can learn much by a careful study of the

hygienic conditions of cities and towns. There are numerous instances of typhoid and cholera epidemics in which these diseases were traced to the drinking-water. In Hamburg, 1892, there were 16,957 cases and 8,606 deaths from cholera. Of the chief typhoid fever epidemics as embodied in a report of the epidemic of Butler, Pa., may be mentioned the following: —

Location.	Date.	Population.	Cases.	Deaths.
Lausanne, Switzerland.....	1872	780	144	.....
Caterham, England.....	1879	5,800	352	21
Plymouth, Pa.....	1885	8,000	1,104	114
Ithica, N. Y.....	1903	13,000	1,300	78
Butler, Pa.....	1903–1904	18,000	1,348	111

In our own city, St. Louis, 1892, there was an epidemic of typhoid fever which was traced directly to the water supply, the latter having become contaminated with sewage which entered the intake.

It is important, therefore, that a community see to it that its water supply be kept pure and wholesome. Experience and statistics have shown that wherever the water supply of a community has been purified, by filtration or otherwise, there has been a decrease in the mortality rate. Moreover, the time will come, as the population of the country grows, when cities will purify not only their water supply, but that they will also be compelled to pay attention to the purification of sewage, so that the towns which are situated lower down along the stream may be assured of a water the quality of which is reasonably pure.

A bacteriological examination of a river is not complete without an intelligent interpretation of the results. A river must be considered as a complex system or body, in which various biological and chemical changes are constantly taking place. All the facts and data that have been collected must be carefully weighed, and their relationship carefully studied. It is of importance that all the tests for comparison should have been made under uniform methods and that the data for comparison should be abundant, for it happens too often

that erroneous conclusions are drawn from isolated or separate tests and insufficient data. We should have at hand chemical analyses of the water so that we may have information as to the mineral and organic constituents. We should have a knowledge of the flora and fauna of the water, of the topography and geology of the river-basin, and of certain meteorological conditions. The location and influence of cities, villages, factories, sewers and tributary streams; the effect of river traffic; the variations in the depth of the water; the velocity of the stream, and the tendency to sedimentation; the degree of pollution and the distance of the source of pollution; the health statistics of the communities along the river; a knowledge of these and many other conditions may be necessary before an intelligent interpretation of bacteriological data of river water as affected by sewage may be arrived at.

When we consider the suffering, the loss of life, and the cost which an epidemic entails upon a community, as well as the harm done to its commercial interests, we are compelled to recognize the importance of a wholesome water supply. It is incumbent upon a community to look after the health of its inhabitants, and it is important that the water supply receive careful and proper attention. The question of the pollution of streams and the consequent contamination of the water supply by sewage from cities and towns has, of late years, received national recognition, but the problems involved in arriving at true conclusions are difficult, and can be only satisfactorily solved by the most careful and scientific inquiry.

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